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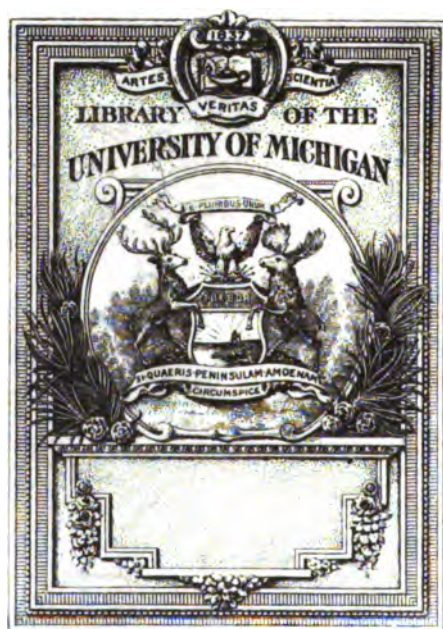
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**Fifty-fourth Annual Report**

**OF THE**

# **Ohio State Board of Agriculture**

**WITH AN ABSTRACT OF THE  
PROCEEDINGS OF**

**The County Agricultural Societies**

**For the Year 1899,**

**TO THE**

**General Assembly of the State of Ohio.**

---

**COLUMBUS, OHIO:  
FRED. J. HEER, STATE PRINTER,  
1900.**



Annual Report  
OF THE  
**Ohio State Board of Agriculture**

For the Year 1899.

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DEPARTMENT OF AGRICULTURE,  
COLUMBUS, March 15, 1900.

*To the Honorable, The General Assembly of Ohio :*

GENTLEMEN : — Complying with the requirements of the Statutes of Ohio, the State Board of Agriculture submits to your honorable body, its Fifty-fourth Annual Report, which contains the transactions of the Board for the year 1899, Crop and Live Stock Statistics, Agricultural Statistics gathered by county auditors and reported to the Department, Tables of Comparative Statistics, Bulletin of Entries and Awards of the Forty-ninth Annual State Fair, Abstracts of Reports from County Agricultural Societies, Report on Commercial Fertilizers, Proceedings of the Fifty-fifth Annual Meeting of The State Board of Agriculture, Report of Farmers' Institutes, Proceedings of the State Farmers' Institute, and Report of the State Horticultural Society.

It is gratifying to the Board to know that the work conducted by the Department of Agriculture is approved and appreciated by the farmers of this great commonwealth and also by those engaged in other industrial and commercial pursuits. It is the aim of the Department to keep abreast of the times and the demands, and in doing this the work increases from year to year.

The General Assembly is warmly commended for its generous recognition of the agricultural interests and its material aid in promoting the same.

Respectfully submitted,

J. W. FLEMING,  
*Assistant Secretary.*

W. W. MILLER,  
*Secretary.*

# OHIO STATE BOARD OF AGRICULTURE

1899

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## OFFICERS.

L. G. ELY, *President.*

G. LIGGETT, *Vice President.*

H. S. GRIMES, *Treasurer.*

W. W. MILLER, *Secretary,*  
Columbus.

J. W. FLEMING, *Ass't Secretary,*  
Columbus.

---

## MEMBERS.

ALBERT HALE, Mogadore, Summit County ..... Term expires January, 1900  
S. H. ELLIS, Waynesville, Warren County ..... Term expires January, 1900  
L. G. ELY, Fayette, Fulton County ..... Term expires January, 1901  
H. S. GRIMES, Portsmouth, Scioto County ..... Term expires January, 1901  
G. LIGGETT, Watkins, Union County .. . . . Term expires January, 1902  
C. BORDWELL, Batavia, Clermont County ..... Term expires January, 1902  
D. J. GREEN, Renrock, Noble County ..... Term expires January, 1903  
SAM'L TAYLOR, Pleasant Corners, Franklin County. Term expires January, 1903  
J. S. STUCKEY, Van Wert, Van Wert County ..... Term expires January, 1904  
B. P. BALDWIN, Tiger, Mahoning County ..... Term expires January, 1904

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## EXECUTIVE COMMITTEE.

L. G. ELY.

H. S. GRIMES.

G. LIGGETT.

SAM'L TAYLOR

---

## FARMERS' INSTITUTE COMMITTEE.

ALBERT HALE.

J. S. STUCKEY.

C. BORDWELL.

---

## AUDITING COMMITTEE.

S. H. ELLIS.

B. P. BALDWIN.

D. J. GREEN.

# OHIO STATE BOARD OF AGRICULTURE

1900

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## OFFICERS.

---

H. S. GRIMES, *President.*

J. S. STUCKEY, *Vice President.*

L. G. ELY, *Treasurer.*

W. W. MILLER, *Secretary.*

J. W. FLEMING, *Ass't Secretary,*

Columbus.

Columbus.

---

## MEMBERS.

---

L. G. ELY, Fayette, Fulton County.....Term expires January, 1901  
H. S. GRIMES, Portsmouth, Scioto County.....Term expires January, 1901  
G. LIGGETT, Watkins, Union County.....Term expires January, 1902  
C. BORDWELL, Batavia, Clermont County.....Term expires January, 1902  
D. J. GREEN, Renrock, Noble County.....Term expires January, 1903  
SAM'L TAYLOR, Pleasant Corners, Franklin County.....Term expires January, 1903  
J. S. STUCKEY, Van Wert, Van Wert County.....Term expires January, 1904  
B. P. BALDWIN, Tiger, Mahoning County.....Term expires January, 1904  
T. E. CROMLEY, Ashville, Pickaway County.....Term expires January, 1905  
T. L. CALVERT, Selma, Clark County.....Term expires January, 1905

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## EXECUTIVE COMMITTEE.

---

H. S. GRIMES.

G. LIGGETT.

SAM'L TAYLOR.

T. E. CROMLEY.

---

## FARMERS' INSTITUTE COMMITTEE.

---

J. S. STUCKEY.

L. G. ELY.

B. P. BALDWIN

---

## AUDITING COMMITTEE.

---

C. BORDWELL.

D. J. GREEN.

T. L. CALVERT.



# LIST OF MEMBERS OF THE OHIO STATE BOARD OF AGRICULTURE..

FROM 1850 TO 1900.

Name.	Years of Service Inclusive.	Postoffice.
M. L. Sullivant†.....	1850-53	Columbus.
S. Medary† .....	1850-53	Columbus.
M. B. Bateham†.....	1850-51	Columbus.
D. Lapham† .....	1850-51	Cincinnati.
F. R. Elliott.....	1850-51	Cleveland.
J. T. Pugsley.....	1850-51	Convenience.
Arthur Wattst .....	1850-52	Chillicothe.
J. M. Edwards.....	1850-52	Canfield.
C. Springert .....	1850-52	Meadow Grove.
J. G. Gest.....	1850-54	Xenia.
S. Halloway .....	1850-51	St. Clairsville.
Allen Trimble† .....	1850-51	Hillsboro.
William Caset .....	1852-53	Cleveland.
Philo Adamst .....	1852-53	Huron.
R. W. Musgravet.....	1852-57	Sulphur Springs.
R. W. Steele.....	1853-56	Dayton.
William H. Ladd.....	1853-56	Richmond.
D. McIntosh .....	1853-54	Shalersville.
J. T. Worthington†.....	1853-56	Chillicothe.
Joseph Sullivant† .....	1854-55	Columbus.
John K. Greene.....	1854-57	Cincinnati.
James L. Cox.....	1854-55	Zanesville.
B. Stedman† .....	1854-57	Cleveland.
Alexander Waddlet .....	1855-60	South Charleston.
Abel Krum .....	1855-58	Cherry Valley.
Lucien Buttlet .....	1856-59	Columbus.
G. W. Bakert .....	1856-57	Marietta.
John M. Milliken†.....	1857-62	Hamilton.
Luther Smith .....	1857-58	West Liberty.
Thomas S. Webb.....	1857-58	Massillon.
Norton S. Townshend† .....	1858-63	Avon.
L. Q. Rawson.....	1858-59	Fremont.
James M. Trimble†.....	1858-61	Hillsboro.
John Rebert .....	1858-61	Lancaster.
D. E. Gardnert.....	1859-64	Toledo.
William Dewitt .....	1859-64	Cleveland.
C. W. Potwin.....	1859-62	Zanesville.
T. C. Jonest .....	1860-67	Delaware.
Henry B. Perkins.....	1860-63	Warren.
David Taylort .....	1861-66	Columbus.
Jacob Egbertt .....	1862-63	Lebanon.
Nelson J. Turney†.....	1862-69	Circleville.
D. McMillant .....	1863-70	Xenia.
W. R. Putnam.....	1863-64	Marietta.
William F. Greert.....	1864-67	Painesville.
James Fullington† .....	1864-69	Irwin Station.
William B. McClung†.....	1864-71	Troy.
James W. Ross.....	1865-70	Perrysburg.

## MEMBERS OF THE STATE BOARD OF AGRICULTURE—Continued.

Name.	Years of Service Inclusive.	Postoffice.
R. R. Donnelly†	1865-68	Wooster.
James Buckingham	1865-72	Zanesville.
J. Park Alexander	1867-70	Akron.
Norton S. Townshend†	1868-69	Avon.
William Lang†	1868-71	Tiffin.
D. C. Richmond†	1869-74	Sandusky.
R. P. Cannon	1870-75	Aurora.
James B. Jamison	1870-77	Cadiz.
L. G. Delano†	1870-75	Chillicothe.
L. B. Sprague†	1871-76	Springfield.
Simpson Harmount	1871-76	New Philadelphia.
John A. Ward†	1871-76	Cleves.
W. S. Hickox	1872-73	Mansfield.
B. W. Carlisle†	1872-79	Hooker's Station.
Justus C. Stephen†	1873-74	Kenton.
John M. Pugh	1874-79	Columbus.
L. B. Wing	1875-80	Newark.
Russell C. Thompson†	1875-76	Sylvania.
Leo Weltz†	1876-83	Wilmington.
D. L. Pope*	1876-81	Welshfield.
Charles Smith†	1877-80	Marion.
E. T. Stickney†	1877-78	Republic.
A. E. Stone	1877-78	Gallipolis.
Peter Murphy	1877-80	Hughes' Station.
W. N. Cowden	1878-83	Quaker City.
R. Baker	1879-82	Elyria.
Arvine C. Wales†	1879-82	Massillon.
R. H. Hayman	1880-81	Portsmouth.
O. P. Chaney	1880-82	Canal Winchester.
C. D. Bailey	1881-88	Gallipolis.
J. C. Levering	1881-86	Levering.
William S. Foster	1881-88	Urbana.
L. B. Harrist†	1882-87	Upper Sandusky.
J. H. Brigham	1882-89	Delta.
L. N. Bonham	1883-86	Oxford.
H. Talcott†	1883-87	Jefferson.
N. A. Sims	1883-85	Columbus.
T. P. Shields	1884-87	Watkins.
John Pow	1884-89	Salem.
S. H. Hurst	1884-89	Chillicothe.
J. J. Sullivan*	1887-88	Millersburg.
Joseph H. Terrell	1887-88	New Vienna.
J. G. Russell	1887-90	Mt. Gilead.
H. G. Tryont†	1888-91	Willoughby.
J. M. Black	1888-90	Hanover.
A. H. Kling	1889-96	Marion.
H. S. Grimes	1889-90	Portsmouth.
A. J. Clark	1889-98	Cambridge.
W. W. Miller	1889-94	Castalia.
J. W. Pollock	1890-93	Cedarville.
N. Ohmer	1890-95	Dayton.
L. G. Ely	1890-91	West Unity.
E. L. Hinman	1890-93	Columbus.
J. C. Bower**	1891-98	Athens.
George Lewis	1891-94	Van Wert.
Chester Bordwell	1892-93	Batavia.
F. A. Derthick	1892-95	Mantua.
J. T. Robinson	1894-97	Rockaway.
G. Liggett	1894	Watkins.

## LIST OF MEMBERS.

## MEMBERS OF THE STATE BOARD OF AGRICULTURE—Concluded.

Name.	Years of Service Inclusive.	Postoffice.
J. H. Pringle.....	1894-95	Cardington.
E. C. Ellis.....	1895-98	Crestvue.
Chester Bordwell.....	1895	Batavia.
L. G. Ely.....	1896	Fayette.
H. S. Grimes.....	1896	Portsmouth.
Albert Hale.....	1896-99	Mogadore.
J. S. Stuckey.....	1897	Van Wert.
S. H. Ellis.....	1898-99	Waynesville.
D. J. Green.....	1899	Renrock.
B. P. Baldwin.....	1899	Tiger.
Samuel Taylor.....	1899	Pleasant Corners.
T. E. Cromley.....	1900	Ashville.
T. L. Calvert.....	1900	Selma.

TABLE SHOWING THE PLACE AND RECEIPTS OF EACH STATE FAIR  
HELD; ALSO A LIST OF THE OFFICERS FOR EACH  
YEAR OF FAIR.

Year.	President.	Treasurer.	Secretary.	Place of Fair.	Receipts.
1850	M. L. Sullivant*	Samuel Medary*	M. B. Bateham*	Cincinnati	\$8,036 18
1851	same	same	W. W. Mather*	Columbus	8,204 09
1852	Arthur Watts*	same	same	Cleveland	13,360 00
1853	Samuel Medary*	M. L. Sullivant*	Geo. Sprague	Dayton	13,996 37
1854	R. W. Musgrave*	Joseph Sullivant*	same	Newark	8,824 58
1855	J. T. Worthington*	same	same	Columbus	9,745 54
1856	William H. Ladd	Lucien Buttles*	same	Cleveland	16,684 20
1857	Alexander Waddle*	same	John H. Klippart*	Cincinnati	17,530 75
1858	John M. Milikin*	same	same	Sandusky	9,997 70
1859	N. S. Townshend*	same	same	Zanesville	8,958 82
1860	Alexander Waddle*	Charles W. Potwin	same	Dayton	11,998 50
1861	Darwin E. Gardner*	same	same	"	8,086 18
1862	Thomas C. Jones*	David Taylor*	same	Cleveland	11,260 64
1863	N. S. Townshend*	same	same	"	11,142 00
1864	Nelson J. Turney*	same	same	Columbus	12,620 54
1865	same	same	same	"	10,658 65
1866	William B. McClung*	same	same	Dayton	14,035 80
1867	Daniel McMillan*	James Buckingham	same	"	18,692 98
1868	James Pullington*	same	same	Toledo	15,606 25
1869	same	same	same	"	19,606 50
1870	James W. Ross	J. Park Alexander	same	Springfield	18,252 65
1871	William Lang*	James Buckingham	same	"	16,460 26
1872	James Buckingham	Simpson Harmount	same	Mansfield	19,149 45
1873	Lincoln G. Delano*	same	same	"	22,517 50
1874	same	same	same	Columbus	27,674 79
1875	R. P. Cannon	same	same	"	20,539 30
1876	S. Harmount	J. M. Pugh	same	"	11,909 61
1877	J. B. Jamieson	same	same	"	21,151 21
1878	J. M. Pugh	L. B. Wing	same	"	11,979 50
1879	E. W. Carlisle*	same	J. W. Fleming	"	30,708 35
1880	L. B. Wing	D. L. Pope	W. I. Chamberlain	"	23,682 20
1881	D. L. Pope	Leo Wells*	same	"	29,706 16
1882	R. Baker	W. N. Cowden	same	"	34,082 52
1883	W. N. Cowden	L. B. Harris*	same	"	88,513 78
1884	W. S. Foster	same	same	"	83,306 48
1885	C. D. Bailey	J. C. Levering	same	"	29,796 51
1886	J. N. Bonham	L. B. Harris	same	"	30,533 17
1887	J. H. Brigham	same	L. N. Bonham	"	30,902 10
1888	John Pow	J. G. Russell	same	Centennial year, no fair.	
1889	same	same	same	Columbus	19,637 41
1890	J. G. Russell	A. H. Kling	same	"	27,574 55
1891	J. M. Black	same	same	"	83,878 64
1892	A. H. Kling	W. W. Miller	same	"	30,357 19
1893	J. W. Pollock	same	same	"	19,350 93
1894	W. W. Miller	F. A. Derthick	same	"	27,260 25
1895	A. J. Clark	same	W. W. Miller	"	83,986 13
1896	J. C. Bower	A. J. Clark	same	"	22,531 20
1897	J. T. Robinson	J. C. Bower	same	"	30,360 48
1898	C. Bordwell	same	same	"	81,023 36
1899	L. G. Ely	H. S. Grimes	same	"	83,749 17
1900	H. S. Grimes	L. G. Ely	same	"	

\* Deceased.



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# TRANSACTIONS

## OF THE

# Ohio State Board of Agriculture,

## FOR THE YEAR 1899.

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DEPARTMENT OF AGRICULTURE,  
COLUMBUS, O., January 12, 1899, 10 o'clock P. M.

The following named gentlemen, comprising the Ohio State Board of Agriculture, met for organization:

### MEMBERS HOLDING OVER.

	Term Expires.
Albert Hale, Mogadore, Summit county.....	January 1900.
S. H. Ellis, Waynesville, Warren county.....	January 1900.
L. G. Ely, (West Unity, Williams co.), Fulton county....	January 1901.
H. S. Grimes, Portsmouth, Scioto county.....	January 1901.
G. Liggett, Watkins, Union county.....	January 1902.

### NEWLY ELECTED MEMBERS.

	Term Expires.
C. Bordwell, Batavia, Clermont county.....	January 1902.
Samuel Taylor, Pleasant Corners, Franklin county.....	January 1903.
D. J. Green, Renrock, Noble county.....	January 1903.
B. P. Baldwin, Tiger, Mahoning county.....	January 1904.
J. S. Stuckey, Van Wert, Van Wert county.....	January 1904.

On motion of Mr. Grimes, Mr. J. S. Stuckey was chosen as temporary chairman.

On assuming the chair, Mr. Stuckey announced as the first business in order, the election of a President.

Mr. Bordwell nominated for President, Mr. L. G. Ely, and there being no further nominations, he was elected by acclamation.

Mr. Ely took the chair and, after a few remarks, called for nominations for Vice President.

Mr. Grimes nominated for Vice President, Mr. G. Liggett, who was elected by the unanimous vote of the Board.

For Treasurer, Mr. Liggett nominated Mr. H. S. Grimes, who was also elected by a unanimous vote.



On motion of Mr. Grimes, the President was requested to appoint committees and assign departments at his discretion and convenience and notify members of his action in the matter.

The President stated that a committee on banking had not been able to report to the old board, and, as one member of that committee was not now a member of the Board, he would substitute in his place the Assistant Secretary, Mr. Fleming.

For the benefit of the new members of the Board, the Secretary was requested to state, and did state, the condition of new buildings and improvements on the fair grounds.

On motion, the Board adjourned to meet at the call of the President.

After adjournment the President notified the Secretary of the following appointment of committees and assignment of departments:

#### EXECUTIVE COMMITTEE.

President L. G. Ely, H. S. Grimes, G. Liggett, Samuel Taylor.

#### FARMERS' INSTITUTE COMMITTEE.

Albert Hale, J. S. Stuckey, S. H. Ellis.

#### AUDITING COMMITTEE.

C. Bordwell, B. P. Baldwin, D. J. Green.

#### DEPARMENT ASSIGNMENTS.

Horses.....	C. Bordwell.
Cattle.....	J. S. Stuckey.
Sheep.....	G. Liggett.
Swine.....	B. P. Baldwin.
Poultry — Manufacturers — Merchandise.....	D. J. Green.
Farm products — Fruits — Flowers.....	S. H. Ellis.
Machinery.....	Albert Hale.
Woman's work — Fine Arts.....	Samuel Taylor.

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#### DEPARTMENT OF AGRICULTURE,

COLUMBUS, O., April 26, 1899, 10 o'clock A. M.

The Board met pursuant to call; president Ely in the chair. On roll call, all members were found to be present. The minutes of the preceding meeting were read and approved.

Mr. Grimes, from the special committee on banking, reported that the committee had made a thorough investigation of the subject and would recommend that the banking business of the Board be continued with the Hayden National Bank.

On motion of Mr. Stuckey, the recommendation of the committee was agreed to.

The Secretary explained to the Board the improvements made in the office rooms and the necessity for the same in order to facilitate the work of the Department.

On motion of Mr. Bordwell, the action of the Secretary in improving the office rooms was approved.

On motion of Mr. Stuckey, the engagement of bands for the State Fair was referred to the Assistant Secretary.

On motion of Mr. Grimes, the Secretary was directed to appoint a bandmaster, to place the bands and oversee their work.

It was agreed that the appointment of expert judges be deferred until the next meeting of the Board.

On motion of Mr. Liggett the sum of forty-five hundred dollars (\$4,500) was agreed upon as the amount that may be devoted to advertising the State Fair.

Mr. Grimes moved that a committee of three be appointed on special attractions for the coming fair, the committee to investigate the subject and contract for that which in its judgment will be the most desirable. The motion prevailed, whereupon the President appointed Mr. Grimes, Secretary Miller and Assistant Secretary Fleming.

On motion of Mr. Grimes, the Secretary was directed to investigate the cost and best manner of lighting the new buildings, and report to the Board at the next meeting.

Mr. Ellis moved that the Secretary be directed to have railings constructed around the storage or sleeping decks in live stock buildings. The motion was agreed to.

It was agreed and ordered that Friday, September 8, be designated as Children's Day at the State Fair and all children under the age of thirteen years be admitted free.

On motion of Mr. Ellis, the President with Mr. Grimes and the Secretary were constituted a committee to perfect the ticket system.

On motion, a recess was taken until 2 o'clock, at which hour the members visited the fair grounds to inspect the improvements in progress and consider further contemplated improvements.

At 4:30 p. m. the Board re-convened in the Department and proceeded to the transaction of business.

On motion of Mr. Grimes, it was agreed that the building committee remove the Columbian Exposition Pagoda from the Art Building to such other place as may be deemed more suitable.

On motion of Mr. Stuckey, the Secretary was directed to have the old Poultry Building arranged for a dining hall.

On motion of Mr. Taylor, the building committee was directed to have a water closet placed in the Woman's Building.

On motion of Mr. Bordwell, the building committee was directed

to remodel the old Swine Ring Building with the two buildings adjoining on the east and the two on the west, so as to be suitable for a Poultry Department.

On motion the Board adjourned to meet June 1st, at 9 o'clock a. m.

Upon adjournment of the Board, the building committee held a session and authorized the Secretary to proceed with the work referred to the committee.

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COLUMBUS, June 1, 10 O'clock A. M.

The Board met pursuant to adjournment and was called to order by President Ely. Members all present.

The minutes of the preceding meeting were read and approved.

The Secretary, who at a former meeting had been directed to investigate the cost and best manner of lighting the new Live Stock Buildings, reported that he had secured one proposition, but desired to secure others, if possible, before making a final report.

On motion of Mr. Ellis, the Secretary was directed to continue the investigation of lightning and authorized to close a contract to the best advantage.

The Secretary reported that all work referred to him by the Board and by the building committee was receiving proper attention and would be completed in due time. Improvements, such as could not well be contracted, would be done by day's work.

It was agreed that the closet for Woman's Building be placed on the first floor.

Ordered, that the Columbian Exposition Pagoda in Art Building be taken out, the cases of birds and fishes and the charts and the grain in jars to be preserved and arranged for exhibit in the gallery of Main Building.

On motion of Mr. Bordwell, it was agreed that the Board visit the grounds during the morning.

The Secretary, from committee to arrange the ticket system, reported that it had been agreed to use the order system only for all admissions, except supply wagons, and that all complimentary and special tickets be dispensed with.

The appointment of judges was taken up, resulting as follows:

#### HORSES.

Draft Classes.....	Henry German, Jr., Van Wert, O.
Light Harness.....	Chas. Woodward, Perrintown, O.
Speed Judges.....	{ D. L. Sampson, Cincinnati, O.
	{ Columbus Dixon, Gilespieville, O.
	{ A. J. Clark, Cambridge, O.
Starter.....	O. S. Lehman, Dayton, O.
Timer.....	Chas. Olmstead, Columbus, O.
Patrol Judge.....	Albert Pickering, Columbus, O..

## CATTLE.

Milk Breeds.....	Clayton C. Taylor, Lawtons Station, Ky.
Beef Breeds.....	Referred to members in charge.

## SHEEP.

Merinos.....	G. S. Thomas, Greenwich, O.
Delaine Merinos.....	U. C. Brouse, Kendalville, Ind.
Mutton Breeds.....	Referred to members in charge.

## SWINE.

Large Breeds.....	C. R. Betts, Stryker, O.
Small Breeds.....	G. S. Hall, Dillworth, O.

## POULTRY.

B. N. Pierce.....	Indianapolis, Ind.
J. A. Bush.....	Sedan, Fayette county, O.

## FARM PRODUCTS, FRUITS AND FLOWERS.

Vegetables.....	Ed. S. Tussing, Canal Winchester, O.
Maple and Honey.....	G. Alba Bartholomew, Huntsburg, O.
Grain and Seeds.....	T. S. Gilliland, Van Wert, O.
Grapes.....	E. H. Cushman, Euclid, O.
Plants and Flowers.....	Will F. Hall, Zanesville, O.
Pears, Plums and Quinces.....	N. Ohmer, Dayton, O.
Apples and Peaches.....	B. H. Brown, Oxford, O.

## WOMAN'S DEPARTMENT AND FINE ARTS.

Art Needle Work.....	Miss Daisy Cherry, Newark, O.
Plain Sewing, Quilts, etc.....	Miss Sarah Oldham, Cambridge, O.
Plain Sewing, Quilts, etc.....	Miss Lizzie McLardy, Chillicothe, O.
China Painting.....	Miss M. L. Vinson, Dayton, O.
Canned Fruits.....	Mrs. Theo. Doty, Portsmouth, O.
Fine Arts.....	Miss Lillian Cole, Bellevue, Iowa.
Fine Arts.....	Miss Mary Goddard, Marysville, O.

## HELPERS.

Miss Daisy Cherry.....	Newark, O.
Miss Lella Ely.....	Fayette, O.
Miss Carrie Ellis.....	Crestvue, O.
Miss Minnie D. Clark.....	Cambridge, O.
Mrs. Jessie Shaffer.....	Urichsville, O.
Miss Nettie Henry.....	London, O.
Mrs. Annie L. Maher.....	Batavia, O.
Miss Grace Wilhelm.....	Portsmouth, O.
Miss Erdine Moore.....	Mantua, O.
Miss Ella Rope.....	Lancaster, O.
Miss Alice Schille.....	Columbus, O.
Miss Pearl Miller.....	Columbus, O.
Miss Maggie Titus.....	Langsville, O.

The Board adjourned to visit the grounds and meet again at 8:30 tomorrow.

FRIDAY, June 2, 8:30 A. M.

Board met agreeable to adjournment Thursday and proceeded to the transaction of business.

The President and Secretary were authorized to execute the note of the Board for any money it may become necessary to borrow to conduct the business of the Board prior to the Fair.

On motion, Captain Alexis Keeler was agreed upon for Chief of State Fair Police, his compensation to be the same in amount as was paid last year.

On motion of Mr. Bordwell, it was agreed that when the Sheep Building is fully completed, according to contract, that the Secretary be authorized to accept the same for the Board and release the contractor.

On motion of Mr. Liggett, the Secretary was instructed to secure curtains or awnings for the Sheep Building.

Adjourned to meet at the call of the President.

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ADMINISTRATION BUILDING,

STATE FAIR GROUNDS,

COLUMBUS, O., September 2, 1899, 2:30 P. M.

The Board met pursuant to call. President Ely in the chair.

The minutes of the preceding meeting were read and approved.

The Secretary reported that the matter of lighting the new buildings, which had been referred to him, had been disposed of by receiving propositions from different parties and accepting the best, which was nine hundred and eighty-six dollars and five cents (\$986.05), submitted by Erner and Co. for wiring ready for city authorities to furnish power at fifty-five cents per light, including the loaning of hoods and lamps and caring for lights during the Fair.

The Secretary reported all other improvements referred to him as completed.

The Secretary reported that Governor Bushnell and friends had been invited to visit the Fair Tuesday evening, to visit San Juan and the fire works, and also to attend the Fair any other day or days to suit his pleasure. The private secretary to the Governor reported the Governor's acceptance of the invitation and that he would notify later the days that would suit his pleasure.

On motion of Mr. Bordwell, the President was directed to appoint two members, who, with himself, should constitute a committee to wait upon the Governor and escort him to the grounds when he should signify his pleasure to attend.

The following was presented by Mr. Stuckey and unanimously adopted:

*Resolved*, That the Chief of Police be instructed to prohibit the tacking or pasting of advertising matter on any of the Fair ground buildings, and that he instruct the constables and police under his charge, to instruct parties so attempting to advertise, that it will not be permitted and to remove any matter they find displayed, and make arrests where deemed necessary to enforce this order.

The Secretary presented a plan for improving the Live Stock Buildings, so as to make them proof against rain and storm and present a more finished appearance. The matter met with favor and it was agreed to take it up for consideration at a future meeting.

On motion, adjourned to meet at call.

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FRIDAY, September 8, 10 o'clock A. M.

Board met pursuant to call. Members all present.

President Ely stated that the meeting was called to consider general matters pertaining to the Fair that might be reported from any of the departments, and especially the calamity of last evening that occurred during the San Juan spectacle and fireworks, by Pain's Fireworks Co.

The Secretary explained fully the terms and conditions of the contract under which the spectacle and fireworks were put on.

On motion of Mr. Grimes, the Secretary was instructed to convey, at the proper time, the sympathy of the Board to the friends of the persons reported to have been killed, and to the persons said to have been injured, last evening.

Adjourned to meet at call.

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FRIDAY, September 8, 3:30 P. M.

Board met at call of President, who stated that call was made to consider matters which the Secretary would explain.

The Secretary informed the Board that reports were current that the Pain's Fireworks Co. had received a wrong shipment of cartridges containing ball; it had been reported to him by the chief of police of Columbus and others that the matter had about been traced to the shipment from factory.

The Assistant Secretary stated what he had heard in the same connection. Mr. Liggett had also heard talk about there being a wrong shipment of cartridges.

The Secretary reported a conversation with Col. Speaks over the telephone, in which the Colonel said that he and his men were ready

and willing to participate in the spectacle, San Juan, at the Fair grounds this evening, but would not use ammunition furnished by the Pain's Fireworks Co., and would not do any firing whatever for fear of accident, but would simply go through the evolutions.

The Secretary was of the opinion that, under all of the circumstances, and because of violation of contract on the part of the Pain's Fireworks Co., the spectacle for this evening should be declared off.

Mr. Ellis moved, that in view of the reports current, as stated, and the conversation of Colonel Speaks with the Secretary, the spectacle and fireworks programmed for tonight be declared off. The motion was supported by Mr. Grimes, and, pending consideration, a recess was taken for thirty minutes.

At limitation of recess, the Board met when the pending motion was agreed to.

On motion of Mr. Grimes, the Assistant Secretary was instructed to notify the Pain People of the action taken by the Board.

It was agreed that ticket sellers should notify ticket purchasers that spectacle and fireworks were declared off, and that ticket sales continue until 8 o'clock p. m. The Secretary was directed to make no further payments to Pain's Fireworks Co.

On motion, the Board adjourned at 5:30 p. m.

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#### DEPARTMENT OF AGRICULTURE,

COLUMBUS, September 27, 10 o'clock A. M.

The Board met pursuant to call. Members all present, except President Ely, in whose absence Vice President Liggett occupied the chair. The Secretary read a letter from President Ely explaining his inability to be present, owing to sickness.

The minutes of the meeting held just prior to the Fair and the minutes of the meetings held during the Fair were read and approved.

The Treasurer submitted a statement of the finances and said full report of the financial transactions for the year would be made at the close of the year to be incorporated in the printed report, which was approved.

Mr. Ellis submitted the following, which was adopted on a ye and nay vote:

*Resolved*, That the President and Secretary be and they are hereby directed and authorized to execute the note of the Board, upon which to secure such funds as may be necessary to pay all unpaid bills due and to become due, and to conduct the business of the Board until the close of the year.

Under the head of communications from the Secretary, that officer explained to the Board the state of affairs in connection with the Pain

Spectacle contract and the calamity that occurred; the advice taken and the information received concerning responsibility.

On motion of Mr. Baldwin, the Secretary was authorized, if in his judgment it becomes necessary or advisable, to employ such counsel as he may elect, including Mr. Amos C. Miller, of Chicago.

Under the head of communications from the Assistant Secretary, protests made at the last Fair were submitted and disposed of as follows:

A protest of H. L. Eckels against the award made in the standard class on two-year-old stallion, was referred to the member in charge, Mr. Bordwell, who finding that the grounds of protest, viz., that the animal did not show in harness, were not well taken, inasmuch as the judge or superintendent had directed the animal to be shown to halter, decided against sustaining the protest.

A protest by C. U. Surface against award in roadster stallion class was made on the ground that the animal was standard bred and should not have competed in the non-standard class. This protest was referred to the member in charge, who decided not to sustain the same.

Mr. Cobb Gavitt filed protest against first award in display of crab apples, claiming that the requisite number of specimens was not shown. This protest was referred to Mr. Ellis, for investigation and later report.

On motion of Mr. Ellis, it was agreed that, in view of the unsettled Pain contract, the Secretary be authorized and further directed to settle with the Pain's Fireworks Co. for any amount that he may find due after the adjustment of all matters growing out of the disaster that occurred during its show and the consequent non-fulfillment of contract.

On motion of Mr. Grimes, the Secretary was instructed to secure from the city a proposition for lighting the Fair grounds as may be required for the annual exhibitions.

The Secretary was instructed to have returned to the Fort Wayne Electric Co. the extra dynamo borrowed for emergency use.

On motion a recess was taken until 1:30 p. m., at which hour the Board re-convened.

The Secretary presented a petition from Fruit exhibitors, asking for a change of rules with respect to disturbing exhibits on the last day of the Fair. On motion, the petition was filed for consideration at the meeting to be held for revision of premium list.

The matter of improving or completing the Live Stock Buildings, submitted at the State Fair meeting, and consideration postponed until the present meeting, was again taken up. The Secretary explained the advisability of closing in the buildings for protection against storms and also to give a finished appearance, whereupon, on motion of Mr. Grimes, the improvement and completion of buildings was referred to the Secretary, to consult with the architect and act in the matter.

The standing committee on Farmers' Institutes submitted the



following report, which, on motion of Mr. Ellis, was approved and adopted as the action of the Board.

COLUMBUS, O., September, 27, 1899.

The President and Members of the Ohio State Board of Agriculture:

GENTLEMEN: In response to a request by your Secretary, W. W. Miller, we, your Farmers' Institute Committee, met at the Department of Agriculture on the 26th instant. With Secretary Miller we examined very carefully the numerous requests and petitions for the establishment of Institutes, to be held under the auspices of this Board during the coming winter, which have been forwarded from the various Farmers' Institutes Societies of the State.

After a thorough examination of all papers bearing on this subject, we unanimously agreed to recommend that Farmers' Institutes be assigned to the following places, at such times as Secretary Miller may decide:

TOWN.	COUNTY.	TOWN.	COUNTY.
Cherryfork .....	Adams	Westville .....	Champaign
Peebles .....	Adams	Catawba .....	Clark
Beaverdam .....	Allen	New Carlisle .....	Clark
Delphos .....	Allen	South Charleston.....	Clark
Spencerville .....	Allen	Tremont City .....	Clark
Yoder .....	Allen	Amelia .....	Clermont
Loudonville .....	Ashland	Bethel .....	Clermont
Polk .....	Ashland	Lerado .....	Clermont
Andover .....	Ashtabula	Mulberry .....	Clermont
Ashtabula .....	Ashtabula	Clarksville .....	Clinton
Geneva .....	Ashtabula	Wilmington .....	Clinton
Pierpont .....	Ashtabula	Leetonia .....	Columbiana
Albany .....	Athens	Lisbon .....	Columbiana
Amesville .....	Athens	New Waterford .....	Columbiana
Athens .....	Athens	Keene .....	Coshocton
Coolville .....	Athens	New Guilford .....	Coshocton
Cridersville .....	Auglaize	Plainfield .....	Coshocton
Kossuth .....	Auglaize	Bucyrus .....	Crawford
St. Johns .....	Auglaize	Galion .....	Crawford
Barnesville .....	Belmont	Tiro .....	Crawford
Belmont .....	Belmont	Chagrin Falls .....	Cuyahoga
Colerain .....	Belmont	Dover .....	Cuyahoga
Decatur .....	Brown	Euclid .....	Cuyahoga
Feesburg .....	Brown	Strongsville .....	Cuyahoga
Union Plains .....	Brown	Arcanum .....	Darke
Monroe.....		Greenville .....	Darke
Reily .....	Butler	New Madison .....	Darke
Ross .....	Butler	Versailles .....	Darke
Sevenmile .....	Butler	Defiance .....	Defiance
Carrollton .....	Carroll	Hicksville .....	Defiance
Minerva .....	Carroll	Delaware .....	Delaware
Kings Creek .....	Champaign	Sunbury .....	Delaware
Mechanicsburg .....	Champaign	Berlin Heights .....	Erie

TOWN.	COUNTY.	TOWN.	COUNTY.
Castalia .....	Erie	Danville .....	Knox
Milan .....	Erie	Fredericktown .....	Knox
Amanda .....	Fairfield	Painesville .....	Lake
Basil .....	Fairfield	Wiloughby .....	Lake
Pleasantville .....	Fairfield	Labelle .....	Lawrence
Bloomingsburg .....	Fayette	Southpoint .....	Lawrence
Goodhope .....	Fayette	Brownsville .....	Licking
New Martinsburg .....	Fayette	Granville .....	Licking
Groveport .....	Franklin	Jersey .....	Licking
Hilliard .....	Franklin	Utica .....	Licking
Pleasant Corners .....	Franklin	Bellefontaine .....	Logan
Westerville .....	Franklin	Degraff .....	Logan
Delta .....	Fulton	West Mansfield .....	Logan
Wauseon .....	Fulton	North Ridgeville .....	Lorain
Rodney .....	Gallia	Pittsfield .....	Lorain
Swancreek .....	Gallia	Rochester .....	Lorain
Burton .....	Geauga	Maumee .....	Lucas
Cedarville .....	Greene	Richfield Center .....	Lucas
Xenia .....	Greene	Sylvania .....	Lucas
Yellowsprings .....	Greene	Waterville .....	Lucas
Cambridge .....	Guernsey	London .....	Madison
Quaker City .....	Guernsey	West Jefferson .....	Madison
Blueash .....	Hamilton	Berlin Center .....	Mahoning
Cleves .....	Hamilton	Canfield .....	Mahoning
Mt. Healthy .....	Hamilton	North Jackson .....	Mahoning
Newtown .....	Hamilton	North Lima .....	Mahoning
Arcadia .....	Hancock	Caledonia .....	Marion
Arlington .....	Hancock	Marion .....	Marion
Benton Ridge .....	Hancock	Waldo .....	Marion
McComb .....	Hancock	Brunswick .....	Medina
Ada .....	Hardin	Chatham .....	Medina
Forest .....	Hardin	Seville .....	Medina
Cadiz .....	Harrison	Chester .....	Meigs
Freeport .....	Harrison	Dyesville .....	Meigs
Deshler .....	Henry	Racine .....	Meigs
Hamler .....	Henry	Fort Recovery .....	Mercer
Napoleon .....	Henry	Neptune .....	Mercer
Hillsboro .....	Highland	Wabash .....	Mercer
Mowrystown .....	Highland	Covington .....	Miami
Rainsboro .....	Highland	Piqua .....	Miami
Laurelville .....	Hocking	West Charleston .....	Miami
Logan .....	Hocking	West Milton .....	Miami
Holmesville .....	Holmes	Beallsville .....	Monroe
Killbuck .....	Holmes	Woodsfield .....	Monroe
East Townsend .....	Huron	Brookville .....	Montgomery
Greenwich .....	Huron	Centerville .....	Montgomery
Monroeville .....	Huron	Germantown .....	Montgomery
Camba .....	Jackson	Vandalia .....	Montgomery
Jackson .....	Jackson	Chesterhill .....	Morgan
Mt. Pleasant .....	Jefferson	Triadelphia .....	Morgan
Richmond .....	Jefferson	Cardington .....	Morrow
Smithfield .....	Jefferson	Sparta .....	Morrow
Centerburg .....	Knox	Chandlersville .....	Muskingum

TOWN.	COUNTY.	TOWN.	COUNTY.
Frazesburg .....	Muskingum	Jackson Center .....	Shelby
New Concord .....	Muskingum	Sidney .....	Shelby
Whitecottage .....	Muskingum	Alliance .....	Stark
Belle Valley .....	Noble	Marlboro .....	Stark
Summerfield .....	Noble	Navarre .....	Stark
Oakharbor .....	Ottawa	New Berlin .....	Stark
Port Clinton .....	Ottawa	Nimisila .....	Summit
Antwerp .....	Paulding	North Springfield .....	Summit
Oakwood .....	Paulding	Osborn Corners .....	Summit
Payne .....	Paulding	Hartford .....	Trumbull
Mt. Perry .....	Perry	Johnsonville .....	Trumbull
Rehoboth .....	Perry	Newtwn Falls .....	Trumbull
Sayre .....	Perry	Vienna .....	Trumbull
Ashville .....	Pickaway	Gnadenhutten .....	Tuscarawas
Tarlton .....	Pickaway	New Philadelphia .....	Tuscarawas
Williamsport .....	Pickaway	Winfield .....	Tuscarawas
Idaho .....	Pike	Zoar .....	Tuscarawas
Piketon .....	Pike	Marysville .....	Union
Charlestown .....	Portage	Richwood .....	Union
Garrettsville .....	Portage	Convoy .....	Van Wert
Mantua Station .....	Portage	Ohio City .....	Van Wert
Randolph .....	Portage	Van Wert .....	Van Wert
Camden .....	Preble	New Plymouth .....	Vinton
Lewisburg .....	Preble	Wilkesville .....	Vinton
New Paris .....	Preble	Franklin .....	Warren
Continental .....	Putnam	Morrow .....	Warren
Ottawa .....	Putnam	Waynesville .....	Warren
Rimer .....	Putnam	Bartlett .....	Washington
Adario .....	Richland	Lower Salem .....	Washington
Bellville .....	Richland	Watertown .....	Washington
Butler .....	Richland	Creston .....	Wayne
Lucas .....	Richland	Lattasburg .....	Wayne
Frankfort .....	Ross	Shreve .....	Wayne
Kingston .....	Ross	Wooster .....	Wayne
Clyde .....	Sandusky	Bryan .....	Williams
Fremont .....	Sandusky	Montpelier .....	Williams
Haverhill .....	Scioto	Bloomdale .....	Wood
Mt. Joy .....	Scioto	Bowling Green .....	Wood
Scioto .....	Scioto	Grand Rapids .....	Wood
Attica .....	Seneca	Prairie Depot .....	Wood
Greenspring .....	Seneca	Nevada .....	Wyandot
Tiffin .....	Seneca	Uper Sandusky .....	Wyandot

At the meeting of your Farmers' Institute Committee, held on the 26th instant, at the Department of Agriculture, a list of lecturers who served the Board for the institute season of 1898-1899 and who are probably available for the coming season, was furnished by Secretary W. W. Miller. After carefully examining all reports from local institute societies, requests, etc., your Committee respectfully recommends the re-appointment of the following gentlemen for the institute season of 1899-1900:

John Begg, Columbus Grove, O.	H. P. Miller, Sunbury, O.
O. E. Bradfute, Cedarville, O.	T. J. Miller, Leipsic, O.
W. N. Cowden, Quaker City, O.	Lowell Roudebush, Owensville, O.
J. Al Dobie, Gutman, O.	Geo. E. Scott, Mt. Pleasant, O.
Prof. W. D. Gibbs, Columbus, O.	John L. Shawver, Bellefontaine, O.
W. W. Farnsworth, Waterville, O.	A. Shirer, Dayton, O.
C. M. Freeman, Rex, O.	S. H. Todd, Wakeman, O.
G. C. Housekeeper, Bowling Green, O.	E. Trumbo, Cranberry, O.
Prof. W. A. Kellerman, Columbus, O.	R. H. Wallace, Chillicothe, O.
G. E. Lawrence, Marion, O.	A. L. White, Norwich, O.
T. C. Laylin, Norwalk, O.	Dr. D. S. White, Columbus, O.
Prof. W. R. Lazenby, Columbus, O.	C. G. Williams, Gustavus, O.
J. A. Lehmann, Savannah, O.	J. E. Wing, Mechanicsburg, O.
S. K. McLaughlin, Hurford, O.	

We would also recommend the appointment of the following additional speakers, whose applications and recommendations, with many others, were received by Secretary Miller and placed on file for reference to your Committee:

Fred L. Allen, Kinsman, O.	Henry S. Kelley, Geneva, O.
W. G. Farnsworth, Waterville, O.	Cary W. Montgomery, Newark, O.
John G. Ickis, Adena, O.	F. M. Nichols, Winterset, O.

Respectfully submitted,

ALBERT HALE,  
J. S. STUCKEY,  
C. BORDWELL,  
*Committee.*

On motion, the Board adjourned to meet at the call of the President.

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DEPARTMENT OF AGRICULTURE,  
COLUMBUS, January 8, 1900, 2:30 P. M.

The Board met pursuant to call. President Ely in the chair and members all present, except Messrs. Bordwell and Green. The minutes of the preceding meeting were read and approved.

The Secretary reported progress with respect to securing from the city of Columbus a proposition for lighting the Fair grounds.

On motion of Mr. Grimes, the matter was continued and the Secretary instructed to further investigate and secure, if possible, from the city a written proposition for presentation at the next meeting of the Board.

For the information of the Board the Secretary made a verbal statement relative to the condition of affairs respecting the Pain's Firework's Co. and the settlement of claims growing out of the accident at the last fair. The Secretary was continued in the matter with the authority as heretofore given.

It was agreed to visit the Fair grounds at 10 o'clock a. m., Tuesday, January 9, to inspect the improvements in the Live Stock Buildings.

A bill of seven dollars (\$7) in favor of Frances E. Helfenstein for goods lost at State Fair of 1897, was, on motion of Mr. Grimes, ordered to be paid.

A communication from Lane & Co., photographers, was referred to the Assistant Secretary for reply.

On motion, the Board adjourned to meet Wednesday, January 10, at 3 o'clock p. m.

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WEDNESDAY, January 10, 3 o'clock p. m.

The Board met with all members present. President Ely in the chair.

Messrs. Gerlaugh, Roudebush and Jones, as a committee representing the Ohio Shorthorn Cattle Breeders' Association, appeared before the Board to urge some changes in the shorthorn cattle classification and premiums for the State Fair of 1900. Mr. Bradfute, an exhibitor of Aberdeen-Angus cattle and a member of the National Live Stock Breeders' Association, was also present and expressed himself in favor of the requests made by, or to be made by, the shorthorn breeders. Mr. Bradfute also recommended an increase in premiums for other breeds of cattle, and favored the combination of certain classes.

It was agreed that the committee named should present its requests in writing, to be acted upon at the next meeting of the Board.

On motion of Mr. Taylor, the action taken at the last meeting, referring the communication of Lane & Co. to the Assistant Secretary, was modified to give the Assistant Secretary power to act in the matters in question.

Complaints were filed that the County Agricultural Societies of Auglaize, Fairfield, Lorain and Ross were not complying with the rules of the State Board and in the conducting of their fairs were committing or permitting illegal acts.

Mr. Grimes moved that a committee of three, of which the President shall be one and the chairman thereof, be appointed to investigate the charges, and have full authority to act.

The President appointed, as two of the members of the committee, Mr. Grimes and Secretary Miller.

Adjourned to meet January 11, at 10 o'clock a. m., at which hour the Board again met, but, no business coming before it an adjournment was taken until after the close of the annual meeting.

THURSDAY, January 11, 9:30 P. M.

The Board met and was called to order by President Ely. There appeared no further business for the Board of 1899, whereupon it adjourned *sine die*.

W. W. MILLER, Secretary.

J. W. FLEMING, Assistant Secretary.

## DEPARTMENT OF AGRICULTURE,

COLUMBUS, January 11, 1900.

10 o'clock P. M.

The following named gentlemen, comprising the Ohio State Board of Agriculture for 1900, met for organization:

L. G. Ely, (West Unity, Williams co.), Fulton county..... January 1901.  
 H. S. Grimes, Portsmouth, Scioto county..... January 1901.  
 G. Liggett, Watkins, Union county..... January 1902.  
 C. Bordwell, Batavia, Clermont county..... January 1902.  
 D. J. Green, Renrock, Noble county..... January 1903.  
 Samuel Taylor, Pleasant Corners, Franklin county..... January 1903.  
 J. S. Stuckey, Van Wert, Van Wert county..... January 1904.  
 B. P. Baldwin, Tiger, Mahoning county..... January 1904.  
  
 T. E. Cromley, Ashville, Pickaway county..... January 1905.  
 T. L. Calvert, Selma, Clark county..... January 1905.

The following are the officers:

H. S. Grimes.....President.  
 J. S. Stuckey.....Vice President.  
 L. G. Ely.....Treasurer.  
 W. W. Miller.....Secretary.  
 J. W. Fleming.....Assistant Secretary.

## CROP AND LIVE STOCK STATISTICS

AS ESTIMATED BY THE

### Ohio Department of Agriculture,

FROM RETURNS RECEIVED FROM ITS CORPS OF REGULAR TOWNSHIP CROP CORRESPONDENTS, DURING THE SEASON OF 1899.

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The following crop reports, with comments made at the time of publication, are selected from the regular monthlies issued by the Department, being those in which account was taken of the acreage and estimated total production of the principal crops of the state, the information being published and sent to farmers and the agricultural and news press within a few days after the information was received and results arrived at, so as to be of benefit in the distribution of the crop and in determining probable requirements for succeeding crops. The monthly reports are based upon estimates returned to the Department during the growing and harvesting seasons by the large corps of correspondents who are practical, intelligent and observing farmers, and their estimates can be relied upon as approximately correct.

The monthly crop reporting system, under the direction of the Department of Agriculture, is for the purpose of furnishing to the producer and to the general public prompt information bearing on the current year's crops and that may be of value in determining under-production or over-production of any of the principal crops of the state. The Department has no interest except to submit the facts and figures as returned by the correspondents. It does not attempt to predict possible rise or fall in prices, or advise the disposition of crops or live stock.

The crop statistics as collected by township assessors and returned to the county auditors cannot be given to the people through the annual publications until late in the year succeeding the one in which the crop was grown, and hence, while valuable as a matter of record, cannot and do not meet the purpose filled by the monthly reports made and promptly published by the Department of Agriculture. The law relating to agricultural statistics returned by township assessors now requires county auditors to return to the Department of Agriculture within thirty days after the township assessors make their reports to the county auditor. Under this provision the figures will be given to the public



in the first monthly report succeeding their compilation for the state and will afterwards be published in the Annual State Agricultural Report.

Following these monthly crop reports will be found a table showing wheat and corn production from 1850 to 1899, inclusive, together with the range of prices, the average prices for each year and the same by series of ten years each.

Following these tables will be found tables showing the number of live stock for the years 1898-99 as returned to the Auditor of State.

The collection, tabulation, computation of results, publication and distribution of the Monthly Crop Reports involves a great deal of careful work on the part of the Department and some expense to the State, but the work is of great importance to the agricultural interests and to the people in general and the expense involved is fully warranted.

It is the aim of the Board to have a reliable correspondent in each township of the State that the fullest possible monthly crop and stock returns may be received, on which to base average estimates for the county and for the State, thus making the monthly reports reliable, which would not be the case if reports were based on conditions as given in certain few localities, because there is very rarely a season wherein the crops are uniform throughout the State, and therefore unless estimates are based on conditions throughout all the townships, taking into consideration the good, fair and bad prospects, as the case may be, reports cannot be reliable. The Department has therefore taken every precaution and adopted every means to make its Monthly Crop and Stock Reports reliable and of value to the public.

## ACREAGE AND CONDITION OF CORN AND POTATOES AND CONDITION OF OTHER CROPS, JULY 1, 1899.

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The following report represents the condition of crops July 1, as estimated from the returns of township crop correspondents of the Department. The estimated corn and potato acreage is by comparison with the area of last year as returned by township assessors:

WHEAT—Condition compared with an average.....	71 per cent.
“ Area plowed up and put in other crops.....	9 “
BARLEY—Condition compared with an average.....	83 “
RYE—Area plowed up and put in other crops.....	2 “
“ Condition compared with an average.....	80 “
OATS—Condition compared with an average.....	85 “
CORN—Area planted in 1898.....	2,961,208 acres.
“ Area compared with last year.....	98 per cent.
“ Estimated area for 1899.....	2,896,820 acres.
“ Condition compared with an average.....	85 per cent.
“ Damage by cut worm.....	4 “
“ Damage by white grub worm.....	5 “
CLOVER—Damage by white grub worm.....	5 “
POTATOES—Area planted in 1898.....	106,083 acres.
“ Area compared with last year.....	98 per cent.
“ Estimated area for 1899.....	104,110 acres.
“ Condition compared with an average.....	90 per cent.
TOBACCO—Acreage compared with last year.....	89 “
TIMOTHY—Compared with an average.....	71 “
HORSES—Condition compared with an average.....	94 “
PASTURES—Condition compared with an average.....	89 “
COLTS—Number compared with an average.....	77 “
CATTLE—Condition compared with an average.....	95 “
CALVES—Number compared with an average.....	91 “
WOOL—Clip compared with last year.....	94 “

Crop conditions or prospects vary exceedingly throughout the state. In some localities improvement is shown, in others no improvement over last month and in many there is an apparent decline in condition. This irregular showing is the result, to a large extent, of the weather conditions that prevailed during the month. No general rains have occurred. Some localities have been favored, others not, and in these latter, crop conditions are poorest. During the month certain localities were visited by severe wind, rain and hail storms which did great damage to crops and to buildings, some of the crop damage being total.

The wheat harvest is about completed, being the earliest in many years. The present prospect indicates a crop of 71 per cent. as compared with a fair average. The crop in central and southern Ohio has been greatly damaged by fly and grub. Some correspondents report that fields have been left standing as not worth the cutting, but such reports are few and have no great bearing on the general result for the State. The results of threshing will be required to know the real wheat production, but it is certain the crop will fall 25 per cent., or more, below an average.

Oats are short, but reports indicate that the heads are filling well. The crop is quite weedy.

Corn is not near up to its usual advancement at this time; is weedy and necessarily neglected during haying and wheat harvest. Much of the corn had to be replanted, hence is very uneven. There are many fields that now look as though they could not make much of a crop, but good weather conditions may work favorable results to much of the corn that now looks very unpromising. The white grub worm has been quite a factor in injuring the crop. The corn area is nearly equal to the large acreage of last year.

The area of potatoes is a good average, and about the same in amount as that planted last year. The crop on low lands is especially poor, caused by wet weather soon after planting with an insufficiency of moisture later in the season. Where rains have occurred and on good rich lands the crop looks well and is exceptionally free from bugs.

Timothy hay is a short crop generally and in most localities the quality is impaired by a generous growth of whitetops. A great deal was frozen out last winter and the grub worm added to the injury sustained.

Pastures are short where drouth prevailed. Some correspondents report that farmers are feeding.

## CONDITION OF CROPS, JULY 1.

Counties.	Wheat.		Barley.	Rye.		Oats.
	Condition Compared with an Average.	Area Plowed Up and put in Other Crops.	Condition Compared with an Average.	Area Plowed Up and put in Other Crops.	Condition Compared with an Average.	Condition Compared with an Average.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Adams .....	62	3	90	3	70	80
Allen .....	77	8	88		88	98
Ashland .....	82	3	84	1	90	92
Ashtabula .....	98		93		90	110
Athens .....	99				75	64
Auglaize .....	73	8			70	65
Belmont .....	66	1			85	91
Brown .....	64	4		20	90	80
Butler .....	78		89	1	82	79
Carroll .....	67	10			79	91
Champaign .....	67				75	65
Clark .....	75	4			92	77
Clermont .....	59	2	72	2	85	94
Clinton .....	83	5	85		87	98
Columbiana .....	77	8	90	3	83	108
Coshocton .....	53	4	45	3	67	81
Crawford .....	94	12	83	5	91	88
Cuyahoga .....	79	2	74	1	81	88
Darke .....	81	2	74	4	82	70
Defiance .....	35	64	100		74	68
Delaware .....	91	4			87	77
Erie .....	79	10	92	15	76	91
Fairfield .....	80	4			83	75
Fayette .....	83	1			94	87
Franklin .....	84				88	85
Fulton .....	17	62	91	2	75	93
Gallia .....	55	2		8	78	83
Geauga .....	83	1	90	1	89	98
Greene .....	82	2	80		87	81
Guernsey .....	71	2			85	101
Hamilton .....	80	6	82	8	70	87
Hancock .....	79	4	84		84	81
Hardin .....	85	2	100	1	83	68
Harrison .....	72	1			85	86
Henry .....	19	80	92	9	60	98
Highland .....	54	3			79	85
Hocking .....	67	4			83	73
Holmes .....	73		62		88	92
Huron .....	91	1		13	83	98
Jackson .....	67					71
Jefferson .....	65	1	75		84	94
Knox .....	77	3	90		71	91
Lake .....	71	4			90	80
Lawrence .....	66	12	90	11	77	80
Licking .....	81				82	88
Logan .....	83		70		88	59
Lorain .....	107				80	94
Lucas .....	25	65	90	8	77	101
Madison .....	99		80	14	97	88
Mahoning .....	93	1				98
Marion .....	87	1	100	1	57	83
Medina .....	92		80		89	94
Meigs .....	68			1	82	60
Mercer .....	98	2	95		74	85
Miami .....	75	3	77		79	76
Monroe .....	71	1			77	75
Montgomery .....	70	4	77		79	76
Morgan .....	67				73	81
Morrow .....	92			9	90	86
Muskingum .....	58	3			74	87
Noble .....	63	5	100		75	77
Ottawa .....	53	25	97	23	56	93
Paulding .....	20	81	85	5	60	94
Perry .....	69				65	87
Pickaway .....	70	1		9	79	80
Pike .....	53	6			60	75
Portage .....	84		100		80	92

## CONDITION OF CROPS, JULY 1 — Concluded.

Counties.	Wheat.		Barley.	Rye.		Oats.
	Condition Compared with an Average.	Area Plowed Up and put in Other Crops.	Condition Compared with an Average.	Area Plowed Up and put in Other Crops.	Condition Compared with an Average.	Condition Compared with an Average.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Preble .....	83				100	89
Putnam .....	58	20	94	2	82	85
Richland .....	90		82		88	91
Ross .....	57	8			82	61
Sandusky .....	58	10	80		78	80
Scioto .....	62	3		2	40	95
Seneca .....	78	10	80		85	86
Shelby .....	71	4	78		79	63
Stark .....	76		75		87	88
Summit .....	66		70		72	90
Trumbull .....	88				84	90
Tuscarawas .....	66		80		80	100
Union .....	88	1			100	69
Van Wert .....	56	17	78	1	76	92
Vinton .....	65		50		83	98
Warren .....	63	2	80		70	83
Washington .....	63			12	90	78
Wayne .....	61	1	85		82	92
Williams .....	15	60	75		77	110
Wood .....	31	60	81	11	71	84
Wyandot .....	88	1	97		90	91
Average per cent.....	71	9	88	2	80	85
Totals .....						

## AREA AND CONDITION OF CORN.

Counties.	Corn.					
	Area Planted in 1898.	Area Compared with Last Year.	Estimated Area for 1899.	Condition Compared with an Average.	Damage by Cut Worm.	Damage by White Grub Worm.
	Acres.	Per cent.	Acres.	Per cent.	Per cent.	Per cent.
Adams .....	36,468	100	36,468	82	2	8
Allen .....	35,419	100	35,419	98	2	2
Ashland .....	23,160	98	22,901	98	5	5
Ashtabula .....	13,864	109	15,112	90	2	.....
Athens .....	15,432	96	14,660	81	.....	12
Auglaize .....	43,436	90	39,062	68	8	.....
Belmont .....	23,924	92	22,000	74	14	12
Brown .....	45,063	98	44,162	85	3	4
Butler .....	49,290	97	47,782	84	4	4
Carroll .....	14,417	96	13,524	64	3	14
Champaign .....	48,961	100	48,961	100	2	.....
Clark .....	47,408	102	48,351	94	7	.....
Clermont .....	36,680	101	37,046	83	3	2
Clinton .....	55,029	100	55,029	96	4	2
Columbiana .....	18,451	98	18,062	84	6	6
Coshocton .....	25,278	96	24,009	66	2	15
Crawford .....	35,962	100	35,962	88	5	1
Cuyahoga .....	8,346	83	6,927	82	3	2
Darke .....	79,116	88	69,622	82	8	8
Defiance .....	29,118	101	29,409	98	4	.....
Delaware .....	40,691	99	40,287	91	3	1
Erie .....	22,667	98	21,626	86	4	3
Fairfield .....	44,127	99	43,686	96	4	4
Fayette .....	60,082	97	58,279	99	7	.....
Franklin .....	66,086	98	64,714	89	.....	4
Fulton .....	28,211	106	27,521	86	.....	.....
Gallia .....	26,009	96	24,708	77	3	17
Geauga .....	9,324	102	9,510	78	3	1
Greene .....	57,027	94	53,699	88	4	4
Guernsey .....	20,328	100	20,328	84	1	15
Hamilton .....	17,201	97	16,684	97	4	4
Hancock .....	52,758	100	52,758	86	5	.....
Hardin .....	58,066	103	59,237	82	7	.....
Harrison .....	12,498	97	12,123	84	2	7
Henry .....	51,452	110	56,597	102	2	.....
Highland .....	50,208	100	50,208	98	4	4
Hocking .....	16,843	100	16,843	92	4	3
Holmes .....	19,889	94	18,666	88	3	6
Huron .....	29,781	94	27,994	84	5	6
Jackson .....	16,066	92	18,851	87	11	10
Jefferson .....	14,233	99	14,090	79	4	14
Knox .....	33,198	97	32,202	81	3	13
Lake .....	5,881	102	5,488	90	2	.....
Lawrence .....	18,326	83	15,210	75	8	20
Licking .....	52,526	99	52,001	78	2	10
Logan .....	44,529	98	43,638	78	3	8
Lorain .....	18,310	96	17,578	79	1	1
Lucas .....	19,449	108	20,082	94	8	1
Madison .....	79,271	96	76,100	91	3	.....
Mahoning .....	15,068	86	12,968	98	.....	.....
Marion .....	44,669	96	42,326	90	3	1
Medina .....	19,346	98	19,964	88	2	2
Meigs .....	16,918	96	16,072	71	6	18
Mercer .....	47,896	100	47,896	85	1	.....
Miami .....	42,869	97	41,588	85	5	4
Monroe .....	19,664	63	12,010	73	8	12
Montgomery .....	44,765	97	43,422	85	5	4
Morgan .....	16,755	98	16,420	82	8	9
Morrow .....	29,021	98	28,441	87	4	2
Muskingum .....	30,006	100	30,006	74	3	15
Noble .....	17,974	97	17,435	80	9	17
Ottawa .....	18,610	108	20,090	98	.....	.....
Paulding .....	35,353	104	36,767	94	1	.....
Perry .....	18,325	96	17,496	90	4	12
Pickaway .....	69,697	100	69,697	97	6	5
Pike .....	24,682	94	23,182	83	3	10
Portage .....	15,328	96	14,715	69	1	5

## AREA AND CONDITION OF CORN—Concluded.

Counties.	Corn.					
	Area Planted in 1898.	Area Compared with Last Year.	Estimated Area for 1899.	Condition Compared with an Average.	Damage by Cut Worm.	Damage by White Grub Worm.
	Acres.	Per cent.	Acres.	Per cent.	Per cent.	Per cent.
Preble .....	49,928	90	49,429	97	2	.....
Putnam .....	57,391	97	55,660	82	4	2
Richland .....	30,519	97	29,608	81	4	3
Ross .....	60,491	101	61,098	84	4	5
Sandusky .....	43,039	100	43,039	84	3	.....
Scioto .....	22,714	92	20,397	87	13	8
Seneca .....	46,680	98	45,748	89	5	.....
Shelby .....	43,876	100	43,876	87	9	1
Stark .....	30,770	96	29,539	78	2	5
Summit .....	18,696	96	17,947	78	.....	4
Trumbull .....	14,715	96	14,127	86	1	1
Tuscarawas .....	22,170	101	22,392	74	5	9
Union .....	43,788	97	42,470	83	1	.....
Van Wert .....	46,637	96	44,820	88	1	.....
Vinton .....	12,972	99	12,843	88	9	11
Warren .....	43,747	100	43,747	90	5	4
Washington .....	24,615	98	24,123	85	1	9
Wayne .....	34,892	99	34,543	83	3	3
Williams .....	28,964	106	31,402	96	.....	.....
Wood .....	75,345	99	74,592	88	7	1
Wyandot .....	36,604	98	35,872	96	2	.....
Average per cent.....	.....	96	.....	85	4	5
Totals .....	2,961,208	.....	2,896,820	.....	.....	.....

## AREA AND CONDITION OF CROPS.

Counties.	Clover.	Potatoes.			
	Damage by White Grub Worm.	Area Planted in 1898.	Area Compared with Last Year.	Estimated Area for 1899.	Conditions Compared with an Average.
	Per cent.	Acres.	Per cent.	Acres.	Per cent.
Adams .....	10	233	97	226	98
Allen .....	4	562	98	550	92
Ashland .....	0	971	98	962	95
Ashtabula .....		2,737	118	3,230	110
Athens .....	7	557	99	551	92
Auglaize .....		827	88	728	80
Belmont .....	10	891	99	882	100
Brown .....	2	872	104	907	88
Butler .....	1	1,033	98	1,031	89
Carroll .....	20	710	90	639	87
Champaign .....	5	423	100	423	57
Clark .....	2	616	96	591	96
Clermont .....	1	1,156	100	1,156	104
Clinton .....	1	447	103	460	105
Columbiana .....	5	1,627	98	1,564	104
Coshocton .....	10	912	98	894	96
Crawford .....	1	1,346	97	1,306	94
Cuyahoga .....	3	4,933	98	4,854	83
Darke .....	4	1,538	83	1,277	76
Defiance .....	1	928	100	928	98
Delaware .....		558	100	558	88
Erie .....	2	2,563	103	2,640	92
Fairfield .....	2	957	98	938	91
Fayette .....	2	106	94	99	97
Franklin .....	3	1,602	100	1,602	94
Fulton .....		1,116	98	1,094	90
Gallia .....	11	294	90	265	91
Geauga .....	6	2,741	105	2,878	97
Greene .....	5	874	95	830	91
Guernsey .....	0	407	94	437	94
Hamilton .....	3	4,084	97	3,923	105
Hancock .....	5	1,196	100	1,196	90
Hardin .....		1,342	97	1,329	73
Harrison .....	3	388	90	334	92
Henry .....	2	1,546	101	1,561	97
Highland .....	5	823	98	817	97
Hocking .....	2	598	98	574	90
Holmes .....	4	748	100	748	82
Huron .....	2	1,240	94	1,166	94
Jackson .....		280	96	250	95
Jefferson .....	3	609	97	678	97
Knox .....	3	647	90	619	95
Lake .....	2	1,285	94	1,208	73
Lawrence .....	30	238	92	255	80
Licking .....	6	1,251	100	1,251	100
Logan .....	5	633	96	607	72
Lorain .....	2	2,271	97	2,203	83
Lucas .....		3,132	97	3,098	97
Madison .....	3	270	90	250	82
Mahoning .....		1,535	103	1,551	98
Marion .....		684	94	612	82
Medina .....	1	1,892	100	1,892	87
Meigs .....	16	855	98	928	71
Mercer .....		954	94	897	82
Miami .....	3	750	99	675	76
Monroe .....	18	1,271	81	1,030	89
Montgomery .....	3	1,147	90	1,032	76
Morgan .....	8	599	101	605	94
Morrow .....	1	1,218	97	1,181	100
Muskingum .....	10	852	98	835	101
Noble .....	8	450	96	432	96
Ottawa .....		727	100	727	100
Paulding .....		509	84	428	83
Perry .....	14	631	100	631	96
Pickaway .....	6	443	101	447	94
Pike .....	2	476	96	457	88
Portage .....	1	5,961	104	5,575	80



## AREA AND CONDITION OF CROPS — Concluded

Counties.	Clover,	Potatoes.			
	Damage by White Grub Worm.	Area Planted in 1898.	Area Compared with Last Year.	Estimated Area for 1899.	Conditions Compared with an Average.
	Per cent.	Acres.	Per cent.	Acres.	Per cent.
Preble .....		579	100	579	99
Putnam .....	4	945	97	917	76
Richland .....	6	2,357	96	2,239	90
Ross .....	4	668	77	514	86
Sandusky .....	5	2,166	92	1,993	86
Scioto .....	6	842	98	825	94
Seneca .....	4	1,421	96	1,364	87
Shelby .....	3	686	100	686	74
Stark .....	3	3,068	96	2,915	89
Summit .....	7	2,608	96	2,504	86
Trumbull .....		3,694	91	3,361	98
Tuscarawas .....	8	2,041	101	2,504	97
Union .....		285	91	259	69
Van Wert .....	2	609	96	585	87
Vinton .....	15	501	97	486	96
Warren .....	3	627	97	608	99
Washington .....	10	1,443	100	1,443	98
Wayne .....	5	1,629	97	1,590	90
Williams .....		837	92	770	105
Wood .....	4	1,158	97	1,146	88
Wyandot .....		730	85	621	91
Average per cent.....	5		98		90
Totals .....		106,083		104,110	

## CONDITION OF CROPS.

Counties.	Tobacco.	Timothy.	Horses.	Pasture.
	Acres Compared with Last Year.	Condition Compared with an average.	Condition Compared with an average.	Condition Compared with an average.
	Per cent.	Per cent.	Per cent.	Per cent.
Adams .....	82	77	98	88
Allen .....		77	100	73
Ashland .....	100	76	99	98
Ashtabula .....		85	110	107
Athens .....		51	98	82
Auglaize .....		63	98	82
Belmont .....	81	75	99	96
Brown .....	104	73	98	99
Butler .....	100	77	100	97
Carroll .....		56	91	90
Champaign .....		60	90	75
Clark .....		62	100	87
Clermont .....	101	82	100	97
Clinton .....	90	84	99	100
Columbiana .....		71	98	101
Coshocton .....		53	99	84
Crawford .....	100	83	97	92
Cuyahoga .....		72	98	83
Darke .....	74	67	84	78
Defiance .....		73	98	88
Delaware .....		59	94	75
Erie .....		96	99	102
Fairfield .....		76	97	81
Fayette .....		73	100	96
Franklin .....	100	74	99	85
Fulton .....		82	90	98
Gallia .....	60	58	83	92
Geauga .....		79	96	91
Greene .....	98	76	94	89
Gurnsey .....		76	97	91
Hamilton .....	101	83	87	102
Hancock .....		78	100	79
Hardin .....		71	97	71
Harrison .....		68	97	99
Henry .....		73	97	87
Highland .....	98	74	98	99
Hocking .....		75	98	90
Holmes .....		73	98	92
Huron .....	75	86	97	98
Jackson .....	100	63	90	97
Jefferson .....		79	98	99
Knox .....		67	96	86
Lake .....		80	98	93
Lawrence .....	87	57	99	94
Licking .....		71	96	86
Logan .....		53	98	67
Lorain .....	100	82	97	106
Lucas .....		83	97	86
Madison .....		62	96	82
Mahoning .....		71	96	98
Marion .....		64	90	84
Medina .....	92	93	95	90
Meigs .....	95	66	98	76
Mercer .....	100	80	94	88
Miami .....	109	73	97	76
Monroe .....	65	54	94	89
Montgomery .....	105	73	97	76
Morgan .....	80	68	97	98
Morrow .....		73	98	84
Muskingum .....		56	94	90
Noble .....	59	69	92	82
Ottawa .....	59	69	92	82
Paulding .....		81	96	83
Perry .....		80	96	98
Pickaway .....		74	95	86
Pike .....	83	63	87	86
Portage .....		84	100	100

## CONDITION OF CROPS — Concluded.

Counties	Tobacco.	Timothy.	Horses.	Pasture.
	Acres Compared with Last Year.	Condition Compared with an Average.	Condition Compared with an Average.	Condition Compared with an Average.
	Per cent.	Per cent.	Per cent.	Per cent.
Preble .....	91	87	100	94
Putnam .....		68	98	76
Richland .....		75	96	97
Ross .....		55	91	87
Sandusky .....		76	94	82
Scioto .....	80	74	93	100
Seneca .....		83	92	83
Shelby .....	83	71	95	82
Stark .....	100	77	94	86
Summit .....		82	91	84
Trumbull .....		84	97	94
Tuscarawas .....	60	65	94	82
Union .....		56	97	73
Van Wert .....	100	71	97	71
Vinton .....		68	97	86
Warren .....	100	74	98	97
Washington .....		67	98	84
Wayne .....	79	81	100	82
Williams .....		72	95	85
Wood .....		71	88	81
Wyandot .....		85	96	94
Average per cent.....	89	71	94	89

## NUMBER AND CONDITION OF LIVE STOCK.

Counties.	Colts.	Cattle.	Calves.	Wool.
	Number Compared with an Average.	Condition Compared with an Average.	Number Compared with an Average.	Clip Compared with Last Year.
	Per cent.	Per cent.	Per cent.	Per cent.
Adams .....	88	99	98	97
Allen .....	80	92	100	100
Ashland .....	86	90	98	100
Ashtabula .....	84	110	103	89
Athens .....	90	95	98	104
Auglaize .....	77	90	75	85
Belmont .....	80	90	93	99
Brown .....	89	90	100	98
Butler .....	89	100	90	99
Carroll .....	82	93	80	93
Champaign .....	87	100	90	90
Clark .....	82	100	100	92
Clermont .....	76	104	102	100
Clinton .....	105	98	97	90
Columbiana .....	91	104	91	105
Coshocton .....	72	96	93	93
Crawford .....	68	98	91	76
Cuyahoga .....	77	98	76	91
Darke .....	73	85	74	94
Defiance .....	89	100	95	99
Delaware .....	89	94	91	91
Erie .....	87	97	96	101
Fairfield .....	84	94	87	91
Fayette .....	72	95	84	95
Franklin .....	78	93	100	102
Fulton .....	95	95	90	96
Gallia .....	63	93	88	87
Geauga .....	84	97	99	97
Greene .....	77	97	92	98
Guernsey .....	66	98	97	103
Hamilton .....	60	92	90	85
Hancock .....	91	94	99	102
Hardin .....	89	97	87	99
Harrison .....	83	95	90	103
Henry .....	84	96	93	96
Highland .....	73	95	98	98
Hocking .....	65	94	87	92
Holmes .....	78	92	90	96
Huron .....	76	100	90	102
Jackson .....	73	89	90	94
Jefferson .....	94	99	95	105
Knox .....	70	96	90	99
Lake .....	66	99	106	98
Lawrence .....	50	91	84	94
Licking .....	78	97	92	97
Logan .....	77	90	97	98
Lorain .....	68	85	95	98
Lucas .....	88	97	97	100
Madison .....	85	94	91	96
Mahoning .....	60	96	96	96
Marion .....	76	96	87	95
Medina .....	88	95	91	98
Meigs .....	74	97	91	98
Mercer .....	95	98	96	99
Miami .....	80	98	98	96
Monroe .....	62	95	88	85
Montgomery .....	80	93	93	96
Morgan .....	73	100	97	103
Morrow .....	85	98	95	99
Muskingum .....	76	94	93	93
Noble .....	89	93	93	97
Ottawa .....	101	108	97	100
Paulding .....	88	98	95	101
Perry .....	90	94	98	94
Pickaway .....	77	95	92	98
Pike .....	77	91	86	94
Portage .....	76	100	100	88

## NUMBER AND CONDITION OF LIVE STOCK—Concluded.

Counties.	Colts.	Cattle.	Calves.	Wool.
	Number Compared with an Average.	Condition Compared with an Average.	Number Compared with an Average.	Clip Compared with Last Year.
	Per cent.	Per cent.	Per cent.	Per cent.
Preble .....	86	100	102	101
Putnam .....	83	99	97	89
Richland .....	53	97	92	102
Ross .....	67	98	83	90
Sandusky .....	77	98	96	84
Scioto .....	62	91	84	77
Seneca .....	69	89	86	98
Shelby .....	61	86	82	96
Stark .....	82	96	96	80
Summit .....	68	90	96	69
Trumbull .....	68	97	103	102
Tuscarawas .....	90	96	96	102
Union .....	97	97	83	69
Van Wert .....	94	91	87	98
Vinton .....	98	96	97	106
Warren .....	74	98	101	96
Washington .....	80	96	98	97
Wayne .....	82	97	92	98
Williams .....	66	97	96	106
Wood .....	69	98	89	90
Wyandot .....	81	44	89	98
Average per cent.....	77	95	91	94

# ACREAGE AND PRODUCT OF WHEAT, OATS, BARLEY AND RYE AND THE CONDITION OF OTHER CROPS, OCTOBER 1, 1899.

The following figures present the first estimate of the year on the product, in bushels, of wheat, oats, barley and rye, and are based on actual threshing throughout the several counties of the State, as returned to the Department by the regular correspondents. The condition of other crops named is by percentage comparison with a full average condition or prospect:

WHEAT—Area as returned by township assessors.....	2,776,468 acres.
“ Product per acre as estimated from threshers’ returns.....	15.1 bushels.
“ Total estimated product.....	41,951,704 “
“ Quality compared with an average.....	91 per cent.
“ Crop of 1898 still in producers’ hands.....	12 “
OATS—Area as returned by township assessors.....	905,703 acres.
“ Product per acre estimated from threshers’ returns.....	37.5 bushels.
“ Total estimated product.....	34,057,484 “
“ Quality compared with an average.....	94 per cent.
BARLEY—Area as returned by township assessors.....	26,355 acres.
“ Product per acre estimated from threshers’ returns.....	34.2 bushels.
“ Total estimated product.....	891,909 “
“ Quality compared with an average.....	94 per cent.
RYE—Area as returned by township assessors.....	15,371 acres.
“ Product per acre estimated from threshers’ returns.....	17 bushels.
“ Total estimated product.....	261,408 “
“ Quality compared with an average.....	93 per cent.
CORN—Prospect compared with an average.....	85 “
“ Cut up for fodder.....	83 “
“ Average date of cutting for fodder.....	September 10.
POTATOES—Probable total yield compared with an average...	77 per cent.
TOBACCO—Condition compared with an average.....	85 “
PASTURES—Condition compared with an average.....	64 “
APPLES—Prospect compared with an average.....	57 “

The reports of township assessors placed the wheat area in Ohio, sown for the harvest of 1899, at 3,030,855 acres, but owing to the severe cold weather the latter part of the winter, a great deal of the wheat sown was so badly killed as to necessitate plowing up in the spring, to utilize the land for other crops, especially was this true and extensive in some of the northwest counties of the State, where as much as 60 to 80 per cent. of the area seeded was reported as plowed up. In other sections of the State, the plowed up wheat from winter killing and other causes, showed from one to ten per cent., while 25 of the counties showed

no plowed up wheat area. While the loss in area was great in the few northwest counties, the average for the State, on the entire area seeded, was only about nine per cent., representing 254,387 acres. The area originally seeded was so much larger than usual, that, notwithstanding the amount plowed up, there still remained for the harvest an area greater than that harvested last year.

In Central and Southern Ohio the crop was slightly reduced by the ravages of fly and grub, and in Northwestern Ohio the light crop on the materially reduced area from causes above stated, was insufficient for seed. Throughout the State the result of threshing shows the crop to be somewhat irregular, but on the whole, a good product, and with the large acreage, reaches over 41,000,000 bushels, a crop equal in total amount of bushels for the State, to that of last year. The quality of the grain is placed at 91 per cent. of a full average.

The oats crop shows an increased product as compared with last year. The crop was unpromising early in the growing season, but made rapid advance as the harvest approached, resulting in a much better crop than was anticipated early in the season. Some damage resulted to oats in the shock from rains that occurred immediately after cutting.

Barley and rye were about the usual area, with a fair production in the limited localities where grown.

Corn was very irregular in the early stages of its growth, but during the month of July, under the most favorable weather conditions, it made rapid and remarkable progress, when it looked as though the backset from late planting and ravages of grub would be somewhat overcome, and a generally good crop result, but the long continued hot, dry weather during August and part of September, interrupted and reduced the prospect. Early planted corn on good soil is generally a good crop and well matured, but the late planted is, much of it, light and many stalks without ears. Some of the good and excellent corn is along the Scioto bottoms, where big crops are usually expected. For the State as a whole, about 85 per cent. of a full average product is the estimate, and, under all the circumstances this is a gratifying showing.

Pastures are dried up to such an extent that in many parts of the State farmers have been feeding heavily for several weeks. Recent local rains have done some good.

As a result of unfavorable weather conditions at planting time, the ravages of bugs and the injury by drouth, the potato crop is short, in most parts of the State very much so. The late planted, with some exceptions, are small and few in a hill, and few of any planting are excellent, in product or quality.

Apples have been falling from the trees, and the prospect is reduced since the last estimate was made.

Farmers have been busy with fall seeding and considerable is yet to do. Help is scarce and wages have advanced.

## AREA AND PRODUCT OF WHEAT.

Counties.	Wheat.				
	Area.	Product per Acre as Estimated from Threshers' Returns.	Total Product.	Quality Compared with an Average.	Crop of 1898 Still in Producers' Hands.
	Acres.	Bushels.	Bushels.	Per ct.	Per ct.
Adams .....	29,253	10	282,530	83	12
Allen .....	29,908	18	539,964	100	20
Ashland .....	33,864	19	677,616	101	13
Ashtabula .....	15,258	19	289,902	100	17
Athens .....	16,130	12	193,560	79	22
Auglaize .....	40,071	18	721,196	95	2
Belmont .....	27,794	11 $\frac{1}{2}$	326,579	91	23
Brown .....	31,072	9	279,648	92	5
Butler .....	66,038	14	922,932	97	8
Carroll .....	16,122	11	177,342	90	25
Champaign .....	52,407	17	890,919	100	.....
Clark .....	44,489	18	795,812	93	18
Clermont .....	20,614	8 $\frac{1}{2}$	219,565	95	8
Clinton .....	44,016	14	629,824	98	6
Columbiana .....	21,455	13 $\frac{1}{2}$	284,279	99	10
Coshocton .....	34,578	11 $\frac{1}{2}$	397,847	100	12
Crawford .....	23,060	20 $\frac{1}{2}$	508,215	98	8
Cuyahoga .....	11,761	13 $\frac{1}{2}$	217,578	95	8
Darke .....	73,805	18 $\frac{1}{2}$	1,423,431	100	8
Deane .....	13,233	10 $\frac{1}{2}$	135,028	88	3
Delaware .....	26,945	19	511,965	95	18
Erie .....	19,689	19	374,072	96	7
Fairfield .....	62,492	14	734,748	95	12
Fayette .....	49,225	16 $\frac{1}{2}$	812,212	103	6
Franklin .....	50,085	15	750,525	98	22
Fulton .....	12,879	4	51,516	43	7
Gallia .....	26,321	8 $\frac{1}{2}$	163,728	70	7
Geauga .....	10,410	19	197,790	99	6
Greene .....	53,855	17 $\frac{1}{2}$	942,462	98	5
Guernsey .....	21,705	12	261,180	96	22
Hamilton .....	18,271	16	292,336	95	20
Hancock .....	52,233	19	992,427	99	2
Hardin .....	39,905	16 $\frac{1}{2}$	668,409	99	6
Harrison .....	15,139	12 $\frac{1}{2}$	195,452	89	9
Henry .....	8,825	9	79,425	68	26
Highland .....	47,442	11 $\frac{1}{2}$	545,583	89	10
Hocking .....	30,060	12	360,600	75	20
Holmes .....	29,574	15	443,610	95	24
Huron .....	37,097	20	741,940	97	4
Jackson .....	17,619	12	211,428	90	18
Jefferson .....	17,843	11	196,273	83	8
Knox .....	39,273	17	667,641	98	7
Lake .....	6,105	15 $\frac{1}{2}$	98,101	93	15
Lawrence .....	11,025	9	99,855	75	20
Licking .....	49,021	14 $\frac{1}{2}$	610,806	95	22
Logan .....	38,505	19	739,195	102	12
Lorain .....	24,046	10 $\frac{1}{2}$	468,897	98	14
Lucas .....	6,078	7 $\frac{1}{2}$	44,066	48	11
Madison .....	48,278	20 $\frac{1}{2}$	977,030	97	5
Maioning .....	17,166	19 $\frac{1}{2}$	330,446	100	7
Marion .....	31,952	17	543,184	98	4
Medina .....	27,179	21	570,759	100	18
Meigs .....	25,740	11 $\frac{1}{2}$	289,575	81	10
Mercer .....	43,182	20 $\frac{1}{2}$	874,435	100	25
Miami .....	46,906	15	704,490	97	6
Monroe .....	24,666	13	321,048	93	8
Montgomery .....	45,006	15	675,090	97	10
Morgan .....	18,739	15	281,085	93	9
Morrow .....	22,982	21 $\frac{1}{2}$	498,771	99	15
Muskingum .....	31,794	10 $\frac{1}{2}$	341,786	93	9
Noble .....	16,729	14	234,206	94	13
Ottawa .....	14,587	14 $\frac{1}{2}$	211,512	95	10
Paulding .....	5,826	7	37,282	90	18
Perry .....	22,959	13 $\frac{1}{2}$	309,933	97	13
Pickaway .....	58,812	15	862,180	96	26
Pike .....	23,442	9 $\frac{1}{2}$	216,888	78	5
Portage .....	22,371	17 $\frac{1}{2}$	391,493	97	6



## AREA AND PRODUCT OF WHEAT—Concluded.

Counties.	Wheat.				
	Area.	Product per Acre as Estimated from Threshers' Returns.	Total Product.	Quality Compared with an Average.	Crop of 1898 still in Producers' Hands.
	Acres.	Bushels.	Bushels.	Per ct.	Per ct.
Preble .....	51,598	19½	1,006,064	101	4
Putnam .....	42,476	13½	572,428	95	4
Richland .....	41,915	18½	764,949	99	9
Ross .....	52,108	11	573,133	98	8
Sandusky .....	41,017	14½	584,492	93	10
Scioto .....	23,053	11	253,533	87	15
Seneca .....	55,417	20	1,108,340	90	9
Shelby .....	45,668	19½	879,109	99	16
Stark .....	50,818	15	762,270	93	5
Summit .....	39,712	16	491,392	90	25
Trumbull .....	16,070	20	321,400	98	26
Tuscarawas .....	35,395	14	495,530	95	11
Union .....	31,259	19	593,921	98	5
Van Wert .....	30,516	11	336,776	91	25
Vinton .....	12,598	8½	107,063	75	13
Warren .....	40,443	10	404,430	95	2
Washington .....	35,163	12¾	448,328	93	19
Wayne .....	55,483	16	887,728	87	5
Williams .....	13,103	6	78,636	50	10
Wood .....	19,472	11	214,192	81	6
Wyandot .....	32,102	21	674,142	97	13
Average per cent.....		15.1		91	12
Totals .....	2,776,468		41,951,704		

## AREA AND PRODUCT OF OATS.

Counties.	Oats.			
	Area.	Product Per Acres as Estimated from Threshers' Returns.	Total Product.	Quality Compared with an Average.
	Acres.	Bushels.	Bushels.	Per cent.
Adams .....	1,110	29	32,190	85
Allen .....	7,558	42	317,486	90
Ashland .....	15,884	41	651,244	96
Ashtabula .....	16,046	34	545,564	97
Athens .....	914	23	21,022	84
Anglaize .....	9,856	40	394,240	95
Belmont .....	5,204	20	150,916	96
Brown .....	3,909	21	83,079	92
Butler .....	4,000	31	124,000	95
Carroll .....	12,189	35	420,615	75
Champaign .....	5,773	27	155,871	100
Clark .....	3,788	32	119,616	97
Clermont .....	4,899	23	112,677	103
Clinton .....	1,331	31	41,261	90
Columbiana .....	18,778	38	713,564	102
Coshocton .....	7,578	34	257,652	98
Crawford .....	20,174	44	887,656	95
Cuyahoga .....	14,805	41	772,470	96
Darke .....	14,238	27	384,426	81
Defiance .....	22,297	41	914,177	96
Delaware .....	10,227	33	337,491	87
Erie .....	11,139	38	423,282	99
Fairfield .....	1,908	30	57,240	91
Fayette .....	505	25	12,625	100
Franklin .....	7,502	34	255,068	96
Fulton .....	26,695	40	1,067,800	83
Gallia .....	1,038	22	22,836	89
Geauga .....	12,886	40	515,440	101
Greene .....	2,384	24	57,216	83
Guernsey .....	5,361	28	150,108	97
Hamilton .....	1,464	22	32,208	91
Hancock .....	10,432	41	427,712	100
Hardin .....	8,427	28	235,956	91
Harrison .....	4,833	38	183,654	100
Henry .....	10,692	45	886,140	97
Highland .....	531	29	15,399	88
Hocking .....	869	25	21,725	100
Holmes .....	15,001	39	585,039	96
Huron .....	24,866	36	895,176	94
Jackson .....	484	25	12,100	95
Jefferson .....	9,979	41	409,139	101
Knox .....	9,501	36	342,036	96
Lake .....	6,054	35	211,890	98
Lawrence .....	2,089	25	52,225	75
Licking .....	9,315	33	307,395	90
Logan .....	6,148	30	184,440	88
Lorain .....	20,667	39	806,013	96
Lucas .....	15,684	47	737,148	101
Madison .....	4,529	37	167,573	98
Mahoning .....	15,770	45	709,650	100
Marion .....	13,805	35	483,175	98
Medina .....	19,353	42	812,826	101
Meigs .....	1,642	24	39,408	92
Mercer .....	17,720	30	531,000	90
Miami .....	8,624	35	301,840	93
Monroe .....	4,770	22	104,940	99
Montgomery .....	7,742	35	270,970	98
Morgan .....	1,368	25	34,200	93
Morrow .....	14,408	36	518,688	94
Muskingum .....	3,737	27	100,899	94
Noble .....	2,908	33	95,868	94
Ottawa .....	10,698	37	395,752	91
Paulding .....	19,182	43	824,826	97
Perry .....	741	32	23,712	106
Pickaway .....	340	28	9,520	94
Pike .....	340	32	10,880	81
Portage .....	18,851	42	770,742	99

## AREA AND PRODUCT OF OATS — Concluded.

Counties.	Oats.			
	Area.	Product Per Acre as Estimated from Threshers' Returns.	Total Product.	Quality Compared with an Average.
	Acres.	Bushels.	Bushels.	Per cent.
Preble .....	5,623	34	191,182	100
Putnam .....	6,120	33	232,560	83
Richland .....	22,295	40	891,800	94
Ross .....	336	21	7,056	88
Sandusky .....	14,029	37	519,073	91
Scioto .....	2,176	24	58,224	83
Seneca .....	18,254	37	675,398	85
Shelby .....	18,485	37	683,945	94
Stark .....	86,101	36	1,302,876	96
Summit .....	16,600	43	716,638	90
Trumbull .....	19,221	40	768,840	100
Tuscarawas .....	17,957	34	610,538	87
Union .....	7,691	34	261,494	98
Van Wert .....	12,377	27	334,179	88
Vinton .....	716	22	15,752	98
Warren .....	8,717	35	180,095	98
Washington .....	6,000	24	144,000	103
Wayne .....	24,758	42	1,039,886	99
Williams .....	26,198	40	1,047,920	88
Wood .....	36,580	42	1,536,738	93
Wyandot .....	8,728	33	331,664	94
Average per cent.....		37.5		94
Totals .....	905,703		34,057,484	

## AREA AND PRODUCT OF BARLEY.

Counties.	Barley.			
	Area.	Product per Acre as Estimated from Threshers' Returns.	Total Product.	Quality Compared with an Average.
	Acres.	Bushels.	Bushels.	Per cent.
Adams .....				
Allen .....	274	18	4,932	100
Ashland .....	95	15	1,425	90
Ashtabula .....	13	16	196	80
Athens .....				
Auglaize .....	149	17	2,533	96
Belmont .....	51	12	612	95
Brown .....	2	11	22	96
Rutler .....	691	40	27,640	80
Carroll .....	27	14	378	95
Champaign .....	10	20	200	100
Clark .....	7	18	126	95
Clermont .....	4	12	48	98
Clinton .....	14	12	168	90
Columbiana .....	31	15	465	100
Coshocton .....	40	20	800	100
Crawford .....	112	35	3,920	85
Cuyahoga .....	16	20	320	98
Darke .....	428	23	9,844	85
Defiance .....	1,065	30	31,950	94
Delaware .....	1	20	20	97
Erie .....	400	18	7,200	91
Fairfield .....	73	16	1,168	98
Fayette .....	16	18	288	98
Franklin .....				
Fulton .....	792	28	22,176	58
Gallia .....	8	12	96	89
Geauga .....	22	30	660	97
Greene .....	7	35	245	90
Guernsey .....	24	14	336	98
Hamilton .....	192	30	5,760	85
Hancock .....	624	30	18,720	100
Hardin .....	87	15	1,566	100
Harrison .....	116	16	1,856	94
Henry .....	3,284	37	121,708	97
Highland .....	28	19	532	93
Hocking .....	1	15	15	84
Holmes .....	23	20	460	90
Huron .....	206	14	2,884	90
Jackson .....				
Jefferson .....	71	35	2,485	95
Knox .....	31	15	465	90
Lake .....	22	21	462	95
Lawrence .....				
Licking .....	4	20	80	96
Logan .....	54	35	1,890	95
Lorain .....	106	25	2,650	100
Lucas .....	610	42	25,620	100
Madison .....	24	26	624	100
Mahoning .....	6	18	108	100
Marion .....	74	20	1,480	100
Medina .....	151	25	3,775	100
Meigs .....	2	18	36	96
Mercer .....	338	35	11,830	100
Miami .....	49	31	1,519	85
Monroe .....	3	16	48	95
Montgomery .....	110	30	3,300	85
Morgan .....	13	18	270	96
Morrow .....	1	20	20	100
Muskingum .....	21	16	336	95
Noble .....				
Ottawa .....	1,894	35	66,290	80
Paulding .....	4,017	38	152,646	99
Perry .....				
Pickaway .....	14	16	224	100
Pike .....	6	12	72	86
Portage .....	3	20	60	100

## AREA AND PRODUCT OF BARLEY — Concluded

Counties.	Barley.			
	Area.	Product per Acre as Estimated from Threshers' Returns.	Total Product.	Quality Compared with an Average.
	Acres.	Bushels.	Bushels.	Per cent.
Preble .....	13	20	1,400	100
Putnam .....	1,677	36	60,372	92
Richland .....	264	25	6,600	95
Ross .....				
Sandusky .....	209	37	7,733	77
Scioto .....	18	15	270	98
Seneca .....	168	24	4,032	100
Shelby .....	94	22	2,068	97
Stark .....	46	25	1,150	98
Summit .....	80	21	1,680	95
Trumbull .....	120	20	2,400	100
Tuscarawas .....	10	18	180	100
Union .....	14	22	308	100
Van Wert .....	2,062	30	61,860	98
Vinton .....	2	20	40	98
Warren .....	223	28	6,244	100
Washington .....	3	18	54	100
Wayne .....	28	20	560	95
Williams .....	2,141	28	59,948	88
Wood .....	2,528	28	70,784	88
Wyandot .....	36	28	1,008	100
Average per cent. ....		34.2		94
Totals .....	26,355		891,909	

## AREA AND PRODUCT OF RYE.

Counties.	Rye.			
	Area.	Product Per Acre as Estimated from Threshers' Returns.	Total Product.	Quality Compared with an Average.
	Acres.	Bushels.	Bushels.	Per cent.
Adams .....	292	14	4,018	83
Allen .....	123	20	2,500	100
Ashland .....	161	20	3,220	100
Ashtabula .....	268	12	3,216	60
Athens .....				
Auglaize .....	70	18	1,260	95
Belmont .....	85	16	1,360	95
Brown .....	741	16	11,904	94
Butler .....	98	13	1,209	95
Carroll .....	112	12	1,344	97
Champaign .....	150	14	2,100	100
Clark .....	237	21	4,978	100
Clermont .....	759	10	7,590	100
Clinton .....	106	13	2,404	80
Columbiana .....	140	12	1,680	98
Coshocton .....	206	7	1,442	80
Crawford .....	67	17	1,139	100
Cuyahoga .....	363	23	8,349	91
Darke .....	351	16	5,616	100
Defiance .....	121	17	2,057	100
Delaware .....	137	15	2,055	96
Erie .....	204	16	3,264	96
Fairfield .....	163	14	2,282	95
Fayette .....	85	18	1,530	100
Franklin .....	228	16	3,648	100
Fulton .....	213	15	3,195	90
Gallia .....	39	11	429	85
Geauga .....	32	20	640	70
Greene .....	29	20	580	80
Guernsey .....	80	14	1,120	97
Hamilton .....	491	15	7,365	100
Hancock .....	204	15	3,060	100
Hardin .....	166	14	2,324	95
Harrison .....	51	14	714	95
Henry .....	891	25	22,275	97
Highland .....	330	16	5,280	88
Hocking .....	109	12	1,308	100
Holmes .....	323	15	4,845	95
Huron .....	134	29	3,886	95
Jackson .....	27	16	432	99
Jefferson .....	27	13	351	97
Knox .....	218	14	3,052	50
Lake .....	231	11	2,541	100
Lawrence .....	48	14	672	95
Licking .....	721	14	10,094	92
Logan .....	241	20	4,820	98
Lorain .....	31	22	682	100
Lucas .....	426	18	7,668	100
Madison .....	60	20	1,200	90
Mahoning .....	63	20	1,260	100
Marion .....	71	20	1,420	95
Medina .....	232	18	4,176	100
Meigs .....	107	20	2,140	85
Mercer .....	198	21	4,148	100
Miami .....	85	19	1,615	97
Monroe .....	155	15	2,325	100
Montgomery .....	107	20	2,140	98
Morgan .....	45	20	900	100
Morrow .....	159	18	2,862	75
Muskingum .....	263	14	3,682	98
Noble .....	29	20	580	90
Ottawa .....	112	25	2,800	80
Paulding .....	273	25	6,825	94
Perry .....	60	16	960	90
Pickaway .....	25	20	520	93
Pike .....	108	15	1,620	90
Portage .....	43	23	989	100

## AGRICULTURAL REPORT.

## AREA AND PRODUCT OF RYE—Concluded.

Counties.	Rye.			
	Area.	Product Per Acre as Estimated from Threshers' Returns.	Total Product.	Quality Compared with an Average.
	Acres.	Bushels.	Bushels.	Per cent.
Preble .....	111	16	1,665	108
Putnam .....	173	16	2,768	82
Richland .....	260	17	4,403	80
Ross .....	229	20	4,580	94
Sandusky .....	102	25	2,550	80
Scioto .....	53	20	1,060	92
Seneca .....	54	25	1,350	95
Shelby .....	253	22	5,566	98
Stark .....	122	15	1,830	100
Summit .....	107	17	1,819	78
Trumbull .....	79	15	1,185	100
Tuscarawas .....	119	15	1,785	98
Union .....	110	16	1,760	100
Van Wert .....	156	23	3,588	95
Vinton .....	53	12	636	92
Warren .....	207	18	3,726	100
Washington .....	98	18	1,774	100
Wayne .....	75	25	1,875	90
Williams .....	255	15	3,825	90
Wood .....	151	20	3,020	84
Wyandot .....	75	19	1,425	99
Average per cent .....		17		93
Totals .....	15,871		261,408	

## CONDITION OF CROPS.

Counties.	Corn.			Potatoes.	Tobacco.	Pastures.	Apples.
	Prospect Compared with an Average.	Cut Up for Fodder.	Date of Cutting for Fodder, Days after Sept. 1.	Probable Total Yield Compared with an Average.	Condition Compared with an Average.	Condition Compared with an Average.	Product Compared with an Average.
	Per cent.	Per cent.	Days.	Per cent.	Per cent.	Per cent.	Per cent.
Adams .....	84	92	17	68	91	74	52
Allen .....	97	93	5	45	.....	47	70
Ashland .....	88	94	15	76	.....	83	46
Ashtabula .....	59	46	15	64	.....	61	20
Athens .....	92	100	12	83	.....	74	72
Auglaize .....	75	55	14	50	.....	.....	25
Belmont .....	66	91	11	76	75	82	32
Brown .....	92	85	17	64	83	78	67
Butler .....	95	50	16	68	88	78	36
Carroll .....	47	93	15	63	.....	60	18
Champaign .....	90	95	1	25	.....	80	8
Clark .....	93	80	4	53	.....	10	85
Clermont .....	91	88	8	95	100	62	66
Clinton .....	102	81	13	57	95	50	.....
Columbiana .....	79	98	13	88	.....	81	40
Coshocton .....	70	95	11	75	.....	72	50
Crawford .....	88	59	5	78	.....	61	58
Cuyahoga .....	70	69	12	50	.....	40	58
Darke .....	91	75	11	66	87	63	82
Defiance .....	92	94	13	79	100	88	87
Delaware .....	99	94	7	66	100	59	62
Erie .....	88	87	6	55	.....	39	26
Fairfield .....	89	80	11	68	.....	55	83
Fayette .....	105	97	10	78	.....	93	43
Franklin .....	83	97	5	67	.....	60	105
Fulton .....	93	93	8	65	.....	83	43
Gallia .....	88	96	12	83	85	80	43
Geauga .....	70	63	9	67	.....	61	35
Greene .....	95	92	9	72	70	40	28
Guernsey .....	73	95	12	88	75	72	69
Hamilton .....	99	62	15	98	80	62	64
Hancock .....	104	96	6	73	.....	62	81
Hardin .....	94	87	10	66	.....	41	65
Harrison .....	63	100	11	64	.....	68	24
Henry .....	106	73	6	79	.....	54	90
Highland .....	95	98	17	67	84	63	66
Hocking .....	85	100	5	80	.....	100	25
Holmes .....	82	98	21	91	.....	72	60
Huron .....	78	96	7	53	.....	56	47
Jackson .....	80	.....	15	50	.....	50	30
Jefferson .....	73	77	14	80	.....	72	23
Knox .....	81	98	5	74	.....	63	51
Lake .....	76	75	13	58	.....	53	40
Lawrence .....	65	100	5	75	.....	50	40
Licking .....	90	86	8	72	.....	98	51
Logan .....	81	98	3	39	.....	39	77
Lorain .....	85	82	12	61	.....	51	24
Lucas .....	98	85	8	75	.....	61	69
Madison .....	101	77	9	61	.....	54	76
Mahoning .....	85	60	25	69	.....	94	44
Marion .....	95	91	7	57	.....	73	56
Medina .....	76	87	8	68	70	65	85
Meigs .....	82	84	14	64	.....	68	85
Mercer .....	85	76	13	54	77	25	89
Miami .....	97	75	5	62	88	72	86
Monroe .....	81	98	14	85	67	100	62
Montgomery .....	97	75	5	65	90	72	85
Morgan .....	95	97	8	78	67	86	94
Morrow .....	93	98	8	75	.....	53	71
Muskingum .....	81	90	11	80	.....	78	68
Noble .....	98	94	8	89	75	94	64
Ottawa .....	88	88	8	61	.....	80	31
Paulding .....	102	70	11	85	.....	85	86
Perry .....	100	100	13	88	.....	100	87
Pickaway .....	90	93	8	49	.....	96	91
Pike .....	82	70	13	66	90	62	35
Portage .....	69	84	13	61	.....	81	27



## AGRICULTURAL REPORT.

## CONDITION OF CROPS — Concluded.

Counties.	Corn.			Potatoes.	Tobacco.	Pastures.	Apples.
	Prospect Compared with an Average.	Cut Up for Fodder.	Date of Cutting for Fodder, Days after Sept. 1.	Probable Total Yield Compared with an Average.	Condition Compared with an Average.	Condition Compared with an Average.	Product Compared with an Average.
	Per cent.	Per cent.	Days.	Per cent.	Per cent.	Per cent.	Per cent.
Preble .....	99	43	14	78	100	88	83
Putnam .....	94	90	10	58	.....	28	90
Richland .....	93	91	8	61	.....	61	58
Ross .....	92	87	9	56	.....	83	76
Sandusky .....	88	88	8	61	.....	29	31
Scioto .....	97	50	17	45	85	70	52
Seneca .....	96	78	8	53	.....	51	90
Shelby .....	83	92	13	50	89	41	94
Stark .....	75	95	10	70	.....	90	38
Summit .....	61	04	7	90	75	56	55
Trumbull .....	70	70	13	58	.....	49	22
Tuscarawas .....	71	96	17	80	.....	48	56
Union .....	80	94	9	32	.....	56	42
Van Wert .....	86	83	8	79	85	66	60
Vinton .....	65	93	15	75	100	47	35
Warren .....	93	60	15	53	95	82	62
Washington .....	101	51	10	70	85	97	66
Wayne .....	87	74	7	66	75	52	61
Williams .....	93	63	8	65	.....	83	43
Wood .....	92	61	11	57	.....	69	57
Wyandot .....	98	83	7	70	.....	54	74
Average pct.	85	83	.....	77	85	64	57
			Sept. 10.				

## ACREAGE AND CONDITION OF CROPS, NOVEMBER 1, 1899.

The following estimates are derived from the returns made by the regular township crop correspondents of the Department, averaged for each county and for the State. For acreage of wheat, barley and rye, results are obtained from acreage seeded last fall, as returned by township assessors to the respective county auditors and by them, in accordance with law, to the State Department of Agriculture:

WHEAT—Area sown last fall.....	3,030,853 acres.
“ Area sown this fall compared with last year.....	96 per cent.
“ Estimated area for the harvest of 1900.....	2,913,260 acres.
“ Condition compared with an average.....	87 per cent.
“ Average date of seeding.....	September 25.
BARLEY—Area sown last fall.....	5,410 acres.
“ Area sown this fall compared with last year.....	95 per cent.
“ Estimated area of fall sown for the harvest of 1900.....	5,166 acres.
“ Condition compared with an average.....	88 per cent.
RYE—Area sown last fall.....	15,371 acres.
“ Area sown this fall compared with last year.....	95 per cent.
“ Estimated area for the harvest of 1900.....	14,597 acres.
“ Condition compared with an average.....	91 per cent.
CORN—Prospect compared with an average.....	88 “
BUCKWHEAT—Prospect compared with an average.....	72 “
CLOVER SEED—Prospect compared with an average.....	62 “
POTATOES—Estimated average product per acre.....	76 bushels.
“ Affected by rot.....	2 per cent.
APPLES—Prospect compared with an average.....	64 “
HOGS—Condition compared with an average.....	93 “
“ Number to be fattened compared with last year.....	87 “
COMMERCIAL FERTILIZERS—Farmers using .....	46 “

The area of wheat seeded in the fall of 1898 was very large, larger than an average, hence it is no discouragement to find that the present seeding is four per cent. less than that of last year, but not so much less than the actual area that remained for the harvest, because some 250,000 acres of last fall's seeding were plowed up this spring. The present area for the harvest of 1900 is a good average if preserved for the harvest.

Wheat seeding continued very late owing to extremely dry weather; some fields put in so late that the plant has not yet appeared, but recent rains have moistened the ground sufficient to hasten its germination and growth. With the exception of dry weather, conditions have been favorable for wheat growth and the plant is securing a good root and generally the fields are well covered with a fine stand; however, the

plant is tender and there is very widespread complaint of fly, especially in the early sown wheat. The ravages of fly may interfere some with the plant going into winter in the best condition, but vigorous root growth may enable it to overcome much of the damage that may be inflicted. Two or three weeks of favorable weather would do much toward placing the wheat in good condition for the winter.

The smaller portion of barley area is seeded in the fall, the greater portion being sown in the spring. No account is taken by township assessors of the different seedings and this is the first report made by the Department estimating the seeding separately. In the spring the amount then seeded will be estimated, and the total given for the summer harvest.

Corn husking is well advanced and, generally speaking for the State, the crop is yielding fairly well, although not a uniform production. The almost unbroken drouth from the middle of July to the middle of September, had its effect in shortening the crop in many localities, yet, notwithstanding this, the general average produced is fair, though ranging from light to very excellent. A great deal of soft corn has been fed on the stalk to supplement the dried pastures.

The clover seed crop is very short, owing to drouth and the clover midge. Buckwheat is also a short crop.

As indicated in former reports, the potato crop is much below an average for the State, in some localities it is almost a failure. The crop was seriously affected by drouth and the ravages of bugs, and now rot is reported in sixty-nine of the eighty-eight counties of the State, and ranging from one per cent. to as high as eight per cent.

Hog cholera still prevails in many counties, including some of those where the hog product is greatest.

Farmers have their work well in hand, and the year, as a whole, has been for them a good one.

## AREA AND CONDITION OF WHEAT.

Counties.	Wheat.					
	Area Sown Last Fall.	Area Sown this Fall Compared with Last Fall.	Estimated Area for the Harvest of 1900.	Condition Compared with an Average.	When Sown—Days After Sept. 1.	Condition of Soil at Time of Seeding.
	Acres.	Per cent.	Acres.	Per cent.		
Adams	29,127	96	27,962	96	41	Good.
Allen	32,006	102	33,258	89	20	Fair.
Ashland	36,767	98	36,032	90	21	Good.
Ashtabula	15,258	95	14,495	90	20	"
Athens	16,130	97	15,646	99	33	"
Auglaize	43,565	96	41,813	80	48	Fair.
Belmont	27,794	96	26,682	91	21	Good.
Brown	32,367	98	31,720	91	26	"
Butler	66,638	94	62,640	70	30	Fair.
Carroll	17,913	94	16,838	84	21	Good.
Champaign	52,407	96	50,311	73	28	"
Clark	46,343	94	43,562	79	30	Fair.
Clermont	27,157	90	24,441	74	30	Good.
Clinton	47,280	98	46,334	79	27	Fair.
Columbiana	23,321	97	22,421	100	22	"
Coshocton	36,019	99	35,659	80	27	"
Crawford	31,897	97	30,080	83	19	Good.
Cuyahoga	12,001	94	10,921	84	25	"
Darke	77,444	101	78,218	76	30	Fair.
Defiance	36,759	89	32,716	98	20	Good.
Delaware	28,068	103	28,010	95	24	"
Erie	21,876	102	22,314	89	22	Fair.
Fairfield	54,669	98	53,576	85	34	"
Fayette	49,225	95	46,764	88	23	"
Franklin	50,035	100	50,035	98	28	"
Fulton	33,883	95	32,198	90	20	"
Gallia	26,857	96	25,783	83	38	Good.
Geauga	10,410	96	9,094	91	22	Fair.
Greene	54,913	99	54,364	92	25	"
Guernsey	22,209	96	21,967	86	29	"
Hamilton	19,437	85	16,521	75	27	"
Hancock	54,409	87	47,336	65	21	"
Hardin	40,719	97	39,497	90	30	"
Harrison	15,139	93	14,079	83	21	"
Henry	44,127	90	39,714	90	20	"
Highland	48,900	98	45,485	73	25	"
Hocking	31,302	100	31,302	98	33	Good.
Holmes	29,574	95	28,095	95	23	Fair.
Huron	37,097	87	32,274	92	19	Good.
Jackson	17,610	85	14,676	97	32	Fair.
Jefferson	17,843	101	18,021	94	25	Good.
Knox	39,072	101	40,372	98	20	Fair.
Lake	6,328	89	5,632	82	23	"
Lawrence	12,008	102	12,800	73	34	"
Licking	49,021	98	48,041	89	23	Good.
Logan	38,501	98	35,806	69	18	Fair.
Lorain	24,046	95	22,544	91	25	"
Lucas	17,365	95	16,497	100	20	"
Madison	48,278	102	49,244	100	23	"
Mahoning	17,166	98	16,479	91	16	"
Marion	31,962	95	30,354	80	22	"
Medina	27,179	96	26,092	82	20	"
Meigs	25,740	96	24,710	87	35	Good.
Mercer	44,063	91	40,097	70	20	Fair.
Miami	48,419	97	46,966	82	19	"
Monroe	24,696	97	23,955	96	22	"
Montgomery	46,882	95	44,638	83	26	Good.
Morgan	18,739	94	17,615	91	33	"
Morrow	22,532	96	22,015	88	17	"
Muskingum	32,777	101	33,105	94	27	"
Noble	17,610	95	16,730	83	25	"
Ottawa	22,442	100	22,442	86	32	Fair.
Paulding	28,033	90	25,230	100	24	"
Perry	22,958	92	21,121	83	25	Good.
Pickaway	58,812	96	56,460	91	23	Fair.
Pike	24,916	90	22,424	78	34	"
Portage	22,371	94	21,029	91	22	Good.

## AREA AND CONDITION OF WHEAT—Concluded.

County.	Wheat.					
	Area Sown Last Fall.	Area Sown this Fall Compared with Last Year.	Estimated Area for the Harvest of 1900.	Condition Compared with an Average.	When Sown—Days After Sept. 1.	Condition of Soil at Time of Seeding.
	Acres.	Per cent.	Acres.	Per cent.		
Preble .....	51,593	101	52,109	75	21	Fair.
Putnam .....	53,220	97	51,632	97	28	Good.
Richland .....	41,915	101	42,334	86	14	Fair.
Ross .....	56,429	98	54,875	84	27	"
Sandusky .....	45,575	93	42,385	66	21	"
Scioto .....	23,705	92	21,964	99	21	Good.
Seneca .....	61,575	97	59,728	72	27	Fair.
Shelby .....	47,571	100	47,571	75	22	"
Stark .....	30,818	98	49,502	97	23	Good.
Summit .....	30,712	98	29,464	89	20	"
Trumbull .....	16,070	95	15,267	88	20	Fair.
Tuscarawas .....	35,395	97	34,333	93	20	"
Union .....	31,259	97	30,321	75	23	"
Van Wert .....	36,377	101	37,246	97	21	Good.
Vinton .....	12,598	96	12,094	84	34	"
Warren .....	41,371	95	39,302	87	30	Fair.
Washington .....	35,163	96	33,756	94	28	Good.
Wayne .....	56,483	96	53,264	92	20	"
Williams .....	32,765	94	30,799	96	25	Fair.
Wood .....	48,681	93	45,273	88	25	Good.
Wyandot .....	32,102	97	31,139	74	25	Fair.
Per cent.....		96		87	25	
Totals .....	3,030,853		2,913,560			

## AREA AND CONDITION OF BARLEY.

Counties.	Barley.			
	Area Sown Last Fall.	Area Sown this Fall Compared with Last Year.	Estimated Area of Fall Sown for the Harvest of 1900.	Condition Compared with an Average.
	Acres.	Per cent.	Acres.	Per cent.
Adams .....				
Allen .....	49	100	49	100
Ashland .....	37	100	37	90
Ashtabula .....				
Athens .....				
Auglaize .....	149	100	149	96
Belmont .....				
Brown .....	1	100	1	88
Butler .....	622	90	559	86
Carroll .....				
Champaign .....	5	100	5	96
Clark .....				
Clermont .....	4	100	4	90
Clinton .....	11	95	10	94
Columbiana .....				
Coshocton .....				
Crawford .....	56	100	56	85
Cuyahoga .....	2	100	2	78
Darke .....	300	90	270	69
Defiance .....				
Delaware .....	1	100	1	90
Erie .....	48	100	48	89
Fairfield .....	36	100	36	85
Fayette .....	8	100	8	100
Franklin .....				
Fulton .....	24	100	24	90
Gallia .....	8	100	8	90
Geauga .....	2	100	2	91
Greene .....	4	100	4	90
Guernsey .....				
Hamilton .....	179	90	161	80
Hancock .....	624	90	561	75
Hardin .....				
Harrison .....				
Henry .....				
Highland .....	14	100	14	93
Hocking .....	1	100	1	98
Holmes .....	3	100	3	86
Huron .....	51	90	45	75
Jackson .....				
Jefferson .....				
Knox .....				
Lake .....	2	100	2	82
Lawrence .....				
Licking .....				
Logan .....	27	90	24	69
Lorain .....				
Lucas .....				
Madison .....	12	100	12	100
Mahoning .....				
Marion .....	37	100	37	80
Medina .....				
Meigs .....	2	100	2	87
Mercer .....	169	100	169	70
Miami .....	38	90	34	70
Monroe .....				
Montgomery .....	110	110	110	96
Morgan .....	15	100	15	94
Morrow .....	1	100	1	96
Muskingum .....				
Noble .....				
Ottawa .....				
Paulding .....				
Perry .....				
Pickaway .....	14	100	14	96
Pike .....	6	100	6	90
Portage .....				

## AREA AND CONDITION OF BARLEY — Concluded.

Counties.	Barley.			
	Area Sown Last Fall.	Area Sown this Fall Compared with Last Year.	Estimated Area of Fall Sown for the Harvest of 1909.	Condition Compared with an Average.
	Acres.	Per cent.	Acres.	Per cent.
Preble .....	73	100	73	94
Putnam .....				
Richland .....				
Ross .....				
Sandusky .....				
Scioto .....				
Seneca .....				
Shelby .....	94	95	89	85
Stark .....				
Summit .....				
Trumbull .....				
Tuscarawas .....				
Union .....				
Van Wert .....	515	100	515	90
Vinton .....	2	100	2	90
Warren .....	223	100	223	95
Washington .....	3	100	3	95
Wayne .....				
Williams .....	528	100	528	98
Wood .....	1,264	96	1,213	80
Wyandot .....	36	100	36	90
Per cent. ....		95		88
Totals .....	5,410		5,166	

## AREA AND CONDITION OF RYE.

Counties.	Rye.			
	Area Sown Last Fall.	Area Sown this Fall Compared with Last Year.	Estimated Area for the Harvest of 1900.	Condition Compared with an Average.
	Acres.	Per cent.	Acres.	Per cent.
Adams .....	292	95	277	98
Allen .....	128	98	125	78
Ashland .....	161	100	161	100
Ashtabula .....	208	90	241	98
Athens .....	70	100	70	90
Auglaize .....	85	90	77	94
Belmont .....	744	96	714	85
Brown .....	98	95	88	78
Butler .....	118	100	112	92
Carroll .....	150	100	150	98
Champaign .....	237	98	232	90
Clark .....	759	90	683	78
Clermont .....	108	92	100	88
Clinton .....	140	98	130	96
Columbiana .....	206	95	196	94
Coshocton .....	67	96	64	92
Crawford .....	363	85	309	82
Cuyahoga .....	351	90	316	75
Darke .....	121	81	98	100
Defiance .....	137	90	123	96
Delaware .....	204	100	204	100
Erie .....	163	100	163	85
Fairfield .....	85	100	85	88
Fayette .....	228	95	217	93
Franklin .....	213	100	213	100
Fulton .....	39	70	27	73
Gallia .....	32	100	32	95
Geauga .....	29	100	29	87
Greene .....	80	87	70	100
Guernsey .....	491	100	491	95
Hamilton .....	504	90	184	85
Hancock .....	166	98	159	98
Hardin .....	51	82	42	83
Harrison .....	891	100	891	90
Henry .....	330	90	297	68
Highland .....	100	90	98	96
Hocking .....	823	95	807	92
Holmes .....	134	90	121	90
Huron .....	27	100	27	97
Jackson .....	27	100	27	100
Jefferson .....	218	90	193	73
Knox .....	231	95	219	80
Lake .....	49	100	48	73
Lawrence .....	721	90	649	88
Licking .....	241	90	217	73
Logan .....	31	100	31	100
Lorain .....	426	100	426	100
Lucas .....	60	98	58	98
Madison .....	63	100	63	98
Mahoning .....	71	98	70	93
Marion .....	232	100	232	85
Medina .....	107	90	96	85
Meigs .....	198	90	178	83
Mercer .....	85	87	74	75
Miami .....	155	100	155	96
Monroe .....	107	100	107	90
Montgomery .....	45	90	41	97
Morgan .....	159	90	143	88
Morrow .....	263	98	258	100
Muskingum .....	29	100	29	88
Noble .....	112	100	112	80
Ottawa .....	273	100	273	100
Paulding .....	60	100	60	88
Perry .....	28	100	28	88
Pickaway .....	108	100	108	90
Pike .....	43	100	43	95
Portage .....				



## AREA AND CONDITION OF RYE — Concluded.

Counties.	Rye.			
	Area Sown Last Fall.	Area Sown this Fall Compared with Last Year.	Estimated Area for the Harvest of 1900.	Condition Compared with an Average.
	Acres.	Per cent.	Acres.	Per cent.
Preble .....	111	100	111	90
Putnam .....	173	95	164	100
Richland .....	259	100	259	100
Ross .....	229	70	160	90
Sandusky .....	102	95	97	95
Scioto .....	53	96	51	96
Seneca .....	54	90	49	85
Shelby .....	253	100	253	81
Stark .....	122	99	121	97
Summit .....	107	100	107	89
Trumbull .....	79	98	77	89
Tuscarawas .....	119	105	125	93
Union .....	110	100	110	100
Van Wert .....	156	95	148	100
Vinton .....	53	100	53	90
Warren .....	207	96	199	90
Washington .....	96	100	96	96
Wayne .....	75	100	75	90
Williams .....	255	100	255	98
Wood .....	151	98	149	85
Wyandot .....	75	100	75	72
Per cent.....		95		91
Totals .....	15,371		14,527	

## CONDITION OF CROPS.

Counties.	Corn.	Buck- wheat.	Clover Seed.	Potatoes.	
	Prospect Compared with an Average.	Prospect Compared with an Average.	Prospect Compared with an Average.	Average Product Per Acre.	Affected by Rot.
	Per cent.	Per cent.	Per cent.	Bushels.	Per cent. <
Adams .....	85		78	64	4
Allen .....	96	70	70	63	2
Ashland .....	79	85	45	70	6
Ashtabula .....	63	63	50	71	1
Athens .....	89		80	63	1
Auglaize .....	88	70	63	43	3
Belmont .....	73	85	68	109	3
Brown .....	99	80	65	53	1
Butler .....	86	75	89	79	3
Carroll .....	60	93	42	40	3
Champaign .....	90	60	70	75	3
Clark .....	90	55	66	53	1
Clermont .....	97	98	78	83	0
Clinton .....	101	90	89	62	8
Columbiana .....	84	87	50	107	2
Coshocton .....	73	50	79	112	3
Crawford .....	91	67	29	55	2
Cuyahoga .....	80		50	57	0
Darke .....	87	73	80	62	4
Defiance .....	103	74	41	113	0
Delaware .....	96	74	57	57	4
Erie .....	90	80	60	85	0
Fairfield .....	89		100	73	2
Fayette .....	102		81	63	0
Franklin .....	89	75	88	49	2
Fulton .....	95	80	20	100	1
Gallia .....	86	58	57	55	4
Geauga .....	76	70	50	72	0
Greene .....	87	23	97	63	0
Guernsey .....	75	82	75	66	0
Hamilton .....	95		60	125	7
Hancock .....	102		45	67	5
Hardin .....	95		55	75	0
Harrison .....	61	95	80	61	2
Henry .....	105	50	52	90	0
Highland .....	92	79	70	75	5
Hocking .....	88	65	68	113	8
Holmes .....	91	72	66	78	1
Huron .....	90	75	50	55	2
Jackson .....	80		100	85	2
Jefferson .....	77	70	55	100	3
Knox .....	88	88	80	105	3
Lake .....	60		50	63	4
Lawrence .....	74	50	48	94	3
Licking .....	87	56	66	93	4
Logan .....	83	60	74	50	2
Lorain .....	85	55	40	59	1
Lucas .....	99	72	51	102	2
Madison .....	98	100	78	60	1
Mahoning .....	85	68	57	115	5
Marion .....	96	90	42	67	3
Medina .....	70	50	41	70	3
Meigs .....	87	80	82	61	0
Mercer .....	85	90	85	115	2
Miami .....	98		87	68	3
Monroe .....	73	85	68	100	3
Montgomery .....	90		73	70	5
Morgan .....	98	89	73	61	3
Morrow .....	96	67	36	63	3
Muskingum .....	84	78	71	83	1
Noble .....	100	63	75	103	3
Ottawa .....	103	100	53	120	1
Paulding .....	105	45	38	110	0
Perry .....	97	80	80	80	2
Pickaway .....	78		81	51	0
Pike .....	77	50	68	60	3
Portage .....	72	88	65	92	0

## CONDITION OF CROPS — Concluded.

Counties.	Corn.	Buck- wheat.	Clover Seed.	Potatoes.	
	Prospect Compared with an Average.	Prospect Compared with an Average.	Prospect Compared with an Average.	Average Product Per Acre.	Affected by Rot.
	Per cent.	Per cent.	Per cent.	Bushels.	Per cent.
Preble .....	100		88	63	0
Putnam .....	98	50	50	33	3
Richland .....	90	41	33	70	3
Ross .....	80	60	80	66	4
Sandusky .....	50	20	44	67	3
Scioto .....	94		65	58	1
Seneca .....	90	85	87	61	0
St. elby .....	90		40	37	1
Stark .....	81	77	70	96	5
Summit .....	60	70	30	86	0
Trumbull .....	78	65	42	80	0
Tuscarawas .....	71	68	38	82	4
Union .....	88	20	56	26	0
Van Wert .....	104	00	50	70	2
Vinton .....	78	63	50	79	3
Warren .....	100	90	87	69	0
Washington .....	97		71	75	1
Wayne .....	77	80	49	71	3
Williams .....	103	100	68	83	3
Wood .....	87	64	46	75	5
Wyandot .....	98	95	67	77	3
Per cent.....	88	72	62	76	2

## CONDITION OF CROPS, ETC.

Counties.	Apples.	Hogs.		Commere'l Fertilizers
	Product Compared with an Average.	Condition Compared with an Average.	Numbes to be Fat- tened Compared with Last Fall.	Farmers Using.
	Per cent.	Per cent.	Per cent.	Per cent.
Adams .....	56	85	65	34
Allen .....	56	100	88	6
Ashland .....	62	99	90	65
Ashabula .....	15	91	84	82
Athens .....	79	97	98	75
Auglaize .....	73	91	83	7
Belmont .....	32	94	86	44
Brown .....	64	96	82	61
Butler .....	46	100	89	5
Carroll .....	29	89	83	80
Champaign .....	80	98	100	48
Clark .....	82	100	85	20
Clermont .....	66	100	92	62
Clinton .....	63	96	94	32
Columbiana .....	42	99	86	64
Coshocton .....	60	99	89	54
Crawford .....	47	90	86	39
Cuyahoga .....	67	94	90	90
Darke .....	72	94	83	14
Defiance .....	80	92	77	.....
Delaware .....	70	97	86	43
Erie .....	44	99	94	38
Fairfield .....	100	102	94	73
Fayette .....	75	100	94	51
Franklin .....	93	98	89	26
Fulton .....	90	100	90	1
Gallia .....	65	91	78	86
Geauga .....	29	99	94	71
Greene .....	42	71	62	29
Guernsey .....	51	100	79	87
Hamilton .....	75	100	80	2
Hancock .....	81	90	92	14
Hardin .....	100	100	97	3
Harrison .....	32	93	84	54
Henry .....	90	100	75	.....
Highland .....	71	98	83	75
Hocking .....	75	100	95	98
Holmes .....	64	100	98	77
Huron .....	59	96	88	77
Jackson .....	40	100	92	77
Jefferson .....	51	98	89	88
Knox .....	59	101	85	57
Lake .....	32	88	105	64
Lawrence .....	73	95	85	40
Licking .....	49	98	83	49
Logan .....	71	90	80	7
Lorain .....	23	100	90	80
Lucas .....	93	103	91	5
Madison .....	80	97	90	1
Mahoning .....	34	98	93	88
Marion .....	60	94	87	3
Medina .....	76	89	89	98
Meigs .....	50	96	97	7
Mercer .....	82	97	90	13
Miami .....	88	99	90	37
Monroe .....	32	94	86	44
Montgomery .....	68	90	9	33
Morgan .....	100	96	78	93
Morrow .....	69	96	84	74
Muskingum .....	73	99	88	81
Noble .....	81	97	91	64
Ottawa .....	73	88	100	.....
Paulding .....	68	90	80	.....
Perry .....	82	100	77	100
Pickaway .....	72	93	86	35
Pike .....	47	85	88	70
Portage .....	41	100	91	86

## CONDITION OF CROPS, ETC. — Concluded.

Counties.	Apples.	Hogs.		Commere'l Fertilizers.
	Product Compared with an Average.	Condition Compared with an Average.	Number to be Fat- tened Compared with Last Fall.	Farmers Using.
	Per cent.	Per cent.	Per cent.	Per cent.
Preble .....	81	100	94	89
Putnam .....	67	93	83	.....
Richland .....	68	90	91	65
Ross .....	84	95	75	38
Sandusky .....	34	80	90	6
Scioto .....	47	100	95	59
Seneca .....	53	79	76	39
Shelby .....	100	83	83	41
Stark .....	47	100	92	41
Summit .....	42	93	81	51
Trumbull .....	23	98	93	73
Tuscarawas .....	50	96	89	40
Union .....	58	103	88	18
Van Wert .....	82	97	89	.....
Vinton .....	67	99	94	93
Warren .....	67	96	100	45
Washington .....	86	102	88	88
Wayne .....	62	95	88	73
Williams .....	80	93	90	4
Wood .....	64	90	87	4
Wyandot .....	60	91	81	9
Per cent.....	64	93	87	46

ACREAGE AND PRODUCT OF CORN AND POTATOES AND  
THE CONDITION OF OTHER CROPS,  
DECEMBER 1, 1899.

The following report presents careful estimates of the corn and potato product in bushels and the percentage condition of other crops named, being based on the returns received from the regular township crop correspondents of the Department, nearly every township being represented.

WHEAT—Condition compared with an average.....	80 per cent.
“ Crop of 1899 sold as soon as threshed.....	39 “
“ Damage to growing crop by Hessian fly.....	16 “
“ Damage to growing crop by white grub worm.....	2 “
CORN—Estimated area for 1899.....	2,906,361 acres.
“ Estimated average yield per acre.....	36 bushels.
“ Estimated total product for 1899.....	106,462,757 “
“ Per cent. of crop put in silo.....	2 per cent.
“ Average date cribbing began.....	October 11.
Clover—Area sown in 1898 cut for seed.....	26 per cent.
“ Average yield of seed per acre.....	1.62 bushels.
APPLES—Estimated total product.....	58 per cent.
POTATOES—Estimated area for 1899.....	111,744 acres.
“ Estimated average yield per acre.....	71 bushels.
“ Estimated total product for 1899.....	8,033,300 “
TOBACCO—Average product per acre.....	749 pounds.
CATTLE—Number being fed for spring market compared with last year.....	82 per cent.
SHEEP—Number being fed for mutton compared with last year.....	31 “

Wheat condition has declined several points since the report of November 1. A large per cent. of the crop is reported to be going backward and becoming more and more spotted, caused by the work of the Hessian fly, with which the plant is generally infested, and in some localities to a most alarming extent. Its ravages seem to be worse in the early sown, but wheat sown late is not exempt in the more heavily stricken districts. In central and southern Ohio the damage is most severe. In some instances correspondents report fields as almost entirely destroyed. Eighteen counties report condition at 70 per cent. and below, some being below 50 per cent. From these low comparative percentages, the condition of wheat ranges on up to 100 in two counties, a good many of the better counties standing in the nineties. The best wheat condition is in the eastern, northern and northwestern counties, pulling the present state average up to 80 per cent. of a fair average. A great

amount of wheat must necessarily go into winter in bad condition, and the outcome in the spring will depend a great deal upon root vitality and the tendency to new plant growth.

This is the first report of the year estimating corn and potato production in bushels. The corn crop is shown to be a good product for the state, though not equal in total product or bushels per acre to the heavy crop of last year on about the same acreage. The average per acre is given as 36 bushels, and this may be a little high, as a few correspondents in northeastern Ohio evidently figured bushels of ears. The outcome of the Ohio corn crop for 1899 is quite satisfactory.

This is the third successive year for a low product of potatoes. The present crop averages only 71 bushels per acre, which is about the same as last year, and very much below a fair average yield. The total product for the state is about 200,000 bushels less than last year, owing to a decrease in acreage planted. The cause of the present short crop, aside from reduced acreage, is attributed to unfavorable weather conditions and the ravages of bugs as indicated in former reports.

Tobacco is only grown in about twenty counties of the state to an extent worth mentioning. In a few of the counties where produced, the crop is of great importance. Production for the present year is fairly good, though not up to a full average. Corn fodder is being cared for, and a great deal will be used this winter, as the high price of hay has induced farmers to sell off very closely.

## CONDITION OF WHEAT.

Counties.	Wheat.			
	Condition Compared with an Average.	Amount of Crop of 1899 Sold as Soon as Threatened.	Damage to Growing Crop by Hessian Fly.	Damage to Growing Crop by White Grub Worm.
	Per cent.	Per cent.	Per cent.	Per cent.
Adams .....	75	40	27	3
Allen .....	26	39	11	.....
Ashland .....	26	34	10	1
Ashtabula .....	89	15	3	1
Athens .....	97	35	.....	12
Auglaize .....	75	50	24	7
Belmont .....	84	22	11	4
Brown .....	81	49	22	.....
Butler .....	61	40	24	4
Carroll .....	83	27	17	20
Champaign .....	82	55	22	3
Clark .....	49	61	53	.....
Clermont .....	71	32	25	2
Clinton .....	67	08	32	1
Columbiana .....	96	18	0	3
Coshocton .....	00	35	35	6
Crawford .....	88	34	13	1
Cuyahoga .....	89	38	1	.....
Darke .....	70	48	24	6
Defiance .....	97	38	3	.....
Delaware .....	91	30	9	1
Eric .....	79	47	16	2
Fairfield .....	49	39	37	2
Fayette .....	61	64	45	2
Franklin .....	60	38	28	3
Fulton .....	98	29	1	1
Gallia .....	82	41	21	8
Geauga .....	93	23	3	.....
Greene .....	64	47	40	2
Guernsey .....	70	24	21	8
Hamilton .....	86	58	11	.....
Hancock .....	80	38	9	.....
Hardin .....	82	52	10	1
Harrison .....	91	20	5	3
Henry .....	100	45	1	.....
Highland .....	58	39	46	3
Hocking .....	80	25	25	.....
Holmes .....	90	24	10	6
Huron .....	83	31	11	2
Jackson .....	75	37	22	2
Jefferson .....	100	25	3	.....
Knox .....	87	34	8	1
Lake .....	70	25	5	.....
Lawrence .....	92	68	.....	11
Licking .....	76	34	20	2
Logan .....	66	44	13	3
Lorain .....	91	34	2	1
Lucas .....	93	45	5	.....
Madison .....	74	73	29	.....
Mahoning .....	96	33	4	.....
Marion .....	78	52	13	1
Medina .....	91	23	8	1
Meigs .....	87	30	8	8
Mercer .....	80	50	14	4
Miami .....	88	46	8	.....
Monroe .....	92	29	6	6
Montgomery .....	73	30	30	.....
Morgan .....	90	37	7	.....
Morrow .....	87	39	11	1
Muskingum .....	83	25	13	3
Noble .....	91	44	16	5
Ottawa .....	90	50	2	.....
Paulding .....	97	43	.....	2
Perry .....	64	30	34	2
Pickaway .....	63	54	26	.....
Pike .....	55	31	32	4
Portage .....	81	30	13	1



## CONDITION OF WHEAT — Concluded.

Counties.	Wheat.			
	Condition Compared with an Average.	Amount of Crop of 1899 Sold as Soon as Threshed.	Damage to Growing Crop by Hessian Fly.	Damage to Growing Crop by White Grub Worm.
	Per cent.	Per cent.	Per cent.	Per cent.
Preble .....	64	45	40	.....
Putnam .....	87	78	12	1
Richland .....	89	24	7	1
Ross .....	60	53	43	1
Sandusky .....	74	29	16	.....
Scioto .....	91	28	12	2
Seneca .....	71	36	28	.....
Shelby .....	75	40	20	.....
Stark .....	89	25	7	2
Summit .....	88	32	15	2
Trumbull .....	88	36	7	1
Tuscarawas .....	76	33	23	7
Union .....	92	45	3	2
Van Wert .....	91	52	8	.....
Vinton .....	80	33	19	3
Warren .....	76	38	24	.....
Washington .....	99	21	8	2
Wayne .....	89	20	8	1
Williams .....	95	50	3	.....
Wood .....	86	52	8	.....
Wyandot .....	77	34	14	6
Average per cent.....	80	39	16	2

## AREA AND PRODUCT OF CORN.

Counties.	Corn.				
	Estimated Area for 1899.	Estimated Average Yield per Acre—Shelled.	Estimated Total Product for 1899.	Per Cent. of Crop put Into Silo.	Date Cribbing Began—Days after Oct. 1.
	Acres.	Bushels.	Bushels.	Per cent.	
Adams .....	35,479	27	957,033	.....	22
Allen .....	30,625	40	1,225,000	17	8
Ashland .....	22,319	33	736,327	3	10
Ashtabula .....	14,815	27	400,006	3	10
Athens .....	14,575	35	510,125	.....	8
Auglaize .....	39,846	40	1,593,840	.....	9
Belmont .....	22,624	34	769,216	3	10
Brown .....	43,735	31	1,357,335	1	19
Butler .....	50,860	34	1,729,240	1	21
Carroll .....	13,635	15	204,525	.....	11
Champaign .....	52,966	40	2,118,640	.....	6
Clark .....	45,283	38	1,720,754	.....	5
Clermont .....	34,415	27	929,205	1	21
Clinton .....	53,903	37	1,994,411	1	6
Columbiana .....	17,335	33	572,655	0	7
Coshocton .....	24,107	29	699,103	.....	15
Crawford .....	34,730	36	1,250,280	.....	9
Cuyahoga .....	10,516	29	304,664	12	24
Darke .....	70,783	39	2,769,537	.....	5
Defiance .....	29,403	43	1,261,329	.....	16
Delaware .....	38,420	34	1,306,280	2	10
Erie .....	15,617	40	624,680	2	13
Fairfield .....	79,259	37	2,932,583	.....	14
Fayette .....	51,877	43	2,230,711	.....	18
Franklin .....	59,937	37	2,217,009	1	13
Fulton .....	33,173	43	1,426,439	1	7
Gallia .....	22,297	33	735,801	.....	13
Geauga .....	10,234	29	298,236	7	4
Greene .....	50,694	40	2,027,760	2	10
Guernsey .....	18,909	23	436,054	.....	14
Hamilton .....	16,676	31	516,056	1	15
Hancock .....	51,967	44	2,286,548	.....	3
Hardin .....	61,906	36	2,229,088	.....	12
Harrison .....	12,334	31	382,354	3	14
Henry .....	58,038	43	2,534,334	.....	1
Highland .....	40,468	34	1,381,012	1	16
Hocking .....	15,861	30	475,830	.....	10
Holmes .....	20,344	35	712,040	1	6
Huron .....	28,532	38	1,086,116	3	4
Jackson .....	13,976	31	433,876	.....	7
Jefferson .....	13,480	30	404,400	3	4
Knox .....	32,050	34	1,121,320	1	8
Lake .....	5,784	33	190,872	5	32
Lawrence .....	15,870	25	396,775	.....	32
Licking .....	50,538	36	1,819,368	.....	3
Logan .....	41,310	36	1,483,560	16	13
Lorain .....	17,993	34	611,762	1	10
Lucas .....	22,169	41	908,929	4	7
Madison .....	72,336	37	2,678,356	.....	6
Mahoning .....	16,832	29	498,118	2	12
Marion .....	43,268	41	1,773,988	.....	12
Medina .....	10,398	29	562,542	1	3
Meigs .....	15,159	33	500,247	.....	15
Mercer .....	41,784	36	1,504,224	.....	1
Miami .....	40,817	41	1,673,497	3	6
Monroe .....	17,847	31	553,258	.....	13
Montgomery .....	42,575	40	1,703,000	1	10
Morgan .....	15,281	41	626,721	.....	16
Morrow .....	27,056	35	946,960	.....	8
Muskingum .....	28,801	33	950,433	1	10
Noble .....	17,102	35	640,876	.....	3
Ottawa .....	21,563	33	754,705	.....	1
Paulding .....	42,568	42	1,787,772	.....	16
Perry .....	18,077	33	596,541	.....	6
Pickaway .....	60,671	40	2,426,840	.....	6
Pike .....	24,142	31	758,402	.....	20
Portage .....	14,607	27	394,380	7	7

## AREA AND PRODUCT OF CORN — Concluded.

Counties.	Corn.				
	Estimated Area for 1890.	Estimated Average Yield per Acre—Shelled.	Estimated Total Product for 1890.	Per Cent. of Crop put Into Silo.	Date Cr. bbling Began — Days after Oct. 1.
	Acres.	Bushels.	Bushels.	Per cent.	
Preble .....	48,462	40	1,938,480		15
Putnam .....	53,842	45	2,422,890	20	11
Richland .....	28,860	41	1,183,280	1	11
Ross .....	55,918	34	1,901,212		16
Sandusky .....	36,535	39	1,424,865		45
Scioto .....	23,635	40	945,400		25
Seneca .....	47,281	38	1,796,678		10
Shelby .....	41,883	33	1,382,139		12
Stark .....	27,456	32	878,592	1	16
Summit .....	17,702	37	654,974	9	9
Trumbull .....	15,079	31	467,449	4	4
Tuscarawas .....	21,096	34	717,264	3	12
Union .....	42,160	29	1,222,640		1
Van Wert .....	42,679	40	1,707,160		7
Vinton .....	11,130	25	278,750		13
Warren .....	43,046	40	1,721,840	3	23
Washington .....	21,796	33	719,268		12
Wayne .....	35,417	37	1,310,429	4	6
Williams .....	28,263	25	989,205	3	6
Wood .....	76,616	43	3,294,488	1	10
Wyandot .....	34,884	42	1,465,128		10
Average per cent .....		36 bushels.		2	11
Totals .....	2,406,311		106,462,757		

## CONDITION OF CROPS.

Counties.	Clover.		Apples.	Potatoes.		
	Area Sown in 1898, Cut for Seed.	Average Yield Per Acre.	Estimated Yield Compared with an Average.	Estimated Area for 1898.	Estimated Average Yield Per Acre.	Estimated Total Pro- duct for 1898.
	Per cent.	Bushels.	Per cent.	Acres.	Bushels.	Bushels.
Adams .....	30	1.25	23	245	72	17,640
Allen .....	24	1.62	64	672	52	34,944
Ashland .....	17	1.00	39	937	74	69,338
Ashtabula .....	10	1.38	13	2,852	75	213,900
Athens .....	15	3.00	62	490	66	32,340
Auglaize .....	33	1.83	70	906	57	51,642
Belmont .....	26	2.29	24	556	90	63,480
Brown .....	18	1.81	52	620	59	36,580
Butler .....	21	1.85	40	932	54	50,328
Carroll .....	20	1.56	8	544	51	27,744
Champaign .....	19	1.17	65	550	62	34,100
Clark .....	21	1.25	65	600	61	40,260
Clermont .....	5	1.90	53	938	74	69,412
Clinton .....	37	1.79	64	564	60	33,840
Columbiana .....	6	1.06	47	637	62	150,604
Coshocton .....	34	1.93	61	949	109	103,441
Crawford .....	15	1.20	33	1,456	56	81,636
Cuyahoga .....	7	1.50	63	6,285	70	439,050
Darke .....	42	1.54	67	1,501	63	94,563
Defiance .....	23	1.35	66	1,141	98	106,113
Delaware .....	27	1.00	59	544	40	21,760
Erie .....	21	1.57	27	2,770	85	235,450
Fairfield .....	55	2.03	86	1,124	49	55,078
Fayette .....	11	1.76	50	140	60	8,400
Franklin .....	43	1.56	76	1,435	44	63,140
Fulton .....	19	1.17	73	1,192	93	110,856
Gallia .....	36	3.23	63	210	55	11,550
Geauga .....	6	2.75	13	2,890	73	210,070
Greene .....	24	2.00	22	711	50	35,550
Guernsey .....	38	1.63	61	467	58	27,086
Hamilton .....	32	2.67	73	3,128	90	281,620
Hancock .....	26	1.00	70	1,200	66	79,704
Hardin .....	27	1.19	56	1,153	53	61,106
Harrison .....	14	1.50	30	280	75	21,000
Henry .....	17	1.75	100	1,116	63	70,308
Highland .....	27	1.95	70	319	64	19,546
Hocking .....	25	1.50	100	614	80	49,120
Holmes .....	30	1.38	73	919	79	42,601
Huron .....	18	1.17	49	1,535	53	81,555
Jackson .....	...	...	38	194	103	16,892
Jefferson .....	46	1.75	15	665	100	65,500
Knox .....	29	1.25	61	574	101	57,974
Lake .....	10	3.00	40	1,542	60	92,520
Lawrence .....	2	2.00	70	206	67	13,936
Licking .....	27	1.00	47	1,207	88	106,216
Logan .....	27	1.37	51	516	85	13,080
Lorain .....	14	2.00	29	2,162	68	145,376
Lucas .....	44	2.25	52	3,130	75	234,750
Madison .....	37	1.81	57	241	56	13,664
Mahoning .....	14	.93	35	6,315	89	562,075
Marion .....	13	1.42	64	777	60	46,620
Medina .....	14	1.14	75	2,039	81	165,159
Meigs .....	14	2.16	38	1,277	59	75,343
Mercer .....	70	1.50	95	803	100	80,300
Miami .....	50	1.20	65	513	65	52,815
Monroe .....	46	2.50	66	1,220	71	86,620
Montgomery .....	35	1.25	67	1,440	45	65,205
Morgan .....	17	2.10	82	404	47	18,938
Morrow .....	7	.63	70	819	66	54,054
Muskingum .....	11	1.25	75	692	74	51,208
Noble .....	43	2.63	67	558	115	64,170
Ottawa .....	30	3.00	100	639	75	47,925
Paulding .....	29	2.00	95	412	80	32,960
Perry .....	44	1.66	80	596	87	51,852
Pickaway .....	50	1.75	72	363	48	17,787
Pike .....	42	2.00	38	484	8	28,072
Portage .....	12	1.50	34	6,144	86	528,384

## CONDITION OF CROPS — Concluded.

Counties.	Clover.		Apples.	Potatoes.		
	Area Sown in 1898, Cut for Seed.	Average Yield Per Acre.	Estimated Yield Compared with an Average.	Estimated Area for 1899.	Estimated Average Yield Per Acre.	Estimated Total Pro- duct for 1899.
	Per cent.	Bushels.	Per cent.	Acres.	Bushels.	Bushels.
Preble .....	32	1.07	75	735	69	50,715
Putnam .....	25	1.31	56	1,090	48	52,320
Richland .....	16	1.50	56	1,723	83	143,069
Ross .....	35	1.75	71	51.4	65	38,610
Sandusky .....	18	1.07	26	1,929	69	133,101
Scioto .....	25	1.75	39	952	50	47,600
Seneca .....	14	.93	40	1,488	58	85,144
Shelby .....	23	1.23	110	1,079	43	46,397
Stark .....	34	1.50	42	3,371	76	256,196
Summit .....	3	2.00	65	2,489	82	204,098
Trumbull .....	11	2.37	19	2,905	74	214,970
Tuscarawas .....	27	1.12	63	2,048	68	139,264
Union .....	26	1.00	105	248	37	9,176
Van Wert .....	48	1.83	80	683	60	40,980
Vinton .....	17	.75	71	370	64	23,680
Warren .....	7	1.75	47	523	55	29,040
Washington .....	30	1.75	80	1,509	66	99,594
Wayne .....	23	1.07	70	2,211	69	52,559
Williams .....	12	1.50	77	1,055	70	73,850
Wood .....	40	1.70	76	1,203	77	92,631
Wyandot .....	28	1.05	68	841	71	59,711
Average per cent.....	26	1.62	58	.....	71	.....
Totals .....				111,744		8,036,306

## CONDITION OF CROPS AND LIVE STOCK.

Counties.	Tobacco.	Cattle.	Sheep.
	Average Product per Acre.	Number Being Fed for Spring Market Compared with Last Year.	Number Being Fed for Mutton Compared with Last Year.
	Pounds.	Per cent.	Per cent.
Adams .....	700	65	75
Allen .....		90	88
Ashland .....		80	87
Ashtabula .....		77	78
Athens .....		83	100
Auglaize .....		68	80
Belmont .....	850	81	80
Brown .....	840	86	95
Butler .....		84	76
Carroll .....		47	90
Champaign .....		63	57
Clark .....		85	88
Clermont .....	717	96	87
Clinton .....	700	86	92
Columbiana .....		93	88
Coshocton .....		70	73
Crawford .....		80	64
Cuyahoga .....		88	85
Darke .....	871	77	95
Dehance .....		91	98
Delaware .....		86	92
Erie .....		81	79
Fairfield .....		79	78
Fayette .....		118	77
Franklin .....		76	73
Fulton .....		90	86
Gallia .....	500	61	50
Geauga .....		85	93
Greene .....		80	92
Guernsey .....		80	83
Hamilton .....	750	95	87
Hancock .....		96	95
Hardin .....		74	72
Harrison .....		95	88
Henry .....		103	92
Highland .....	550	96	89
Hocking .....		100	75
Holmes .....		94	99
Huron .....		60	73
Jackson .....		65	75
Jefferson .....		88	83
Knox .....		89	83
Lake .....		50	.....
Lawrence .....		75	80
Licking .....		68	59
Logan .....		86	96
Lorain .....		80	79
Lucas .....		101	87
Madison .....		92	89
Mahoning .....		100	100
Marion .....		99	82
Medina .....	1,000	74	81
Meigs .....		60	82
Mercer .....		100	100
Miami .....	880	101	82
Monroe .....	600	30	96
Montgomery .....	800	85	50
Morgan .....	350	83	69
Morrow .....		60	68
Muskingum .....		78	76
Noble .....	700	84	80
Ottawa .....		100	100
Paulding .....		80	82
Perry .....		75	62
Pickaway .....		93	97
Pike .....		50	20
Portage .....		82	77

## CONDITION OF CROPS AND LIVE STOCK—Concluded.

Counties.	Tobacco.	Cattle.	Sheep.
	Average Product per Acre.	Number Being Fed for Spring Market Compared with Last Year.	Number Being Fed for Mutton Compared with Last Year.
	Pounds.	Per cent.	Per cent.
Preble .....	766	102	100
Putnam .....		98	62
Richland .....		83	84
Ross .....		84	77
Sandusky .....		91	81
Scioto .....		75	
Seneca .....		86	79
Shelby .....		60	55
Stark .....		73	75
Summit .....		70	71
Trumbull .....		84	91
Tuscarawas .....		82	95
Union .....		101	98
Van Wert .....		90	88
Vinton .....		79	91
Warren .....	900		
Washington .....		94	92
Wayne .....	900	73	75
Williams .....		100	100
Wood .....		91	75
Wyandot .....		98	85
Average .....	749	82	81

TABLE SHOWING THE ANNUAL PRODUCTION AND PRICE OF WHEAT AND CORN FOR THE YEARS 1850 TO 1899, INCLUSIVE.

Year.	Bushels of Wheat.	Average Number of Bushels per Acre.	Price.		Bushels of Corn.	Average Number of Bushels per Acre.	Price.	
			Range.	Average.			Range.	Average.
1850	31,500,000	18.	\$0.70 to \$1.10	\$0.80	56,619,608	36.8	\$0.24 to \$0.51	\$0.38
1851	25,309,225	15.2	.58 " .78	.60	61,271,822	36.7	.80 " .94	.88
1852	23,043,737	14.1	.69 " .83	.60	68,165,617	33.6	.85 " .94	.89
1853	17,115,311	12.	.60 " .85	.73	73,496,070	40.	.87 " .95	.42
1854	11,969,110	8.	.60 " 1.70	1.19	52,171,551	26.	.40 " .55	.49
1855	19,569,320	13.81	1.10 " 2.00	1.54	87,587,434	39.7	.55 " .80	.67
1856	15,383,887	10.2	.90 " 1.70	1.27	57,892,515	27.7	.82 " .93	.43
1857	25,397,614	14.	1.00 " 1.60	1.18	82,536,186	36.6	.48 " .80	.60
1858	17,655,468	10.4	.67 " 1.00	.77	50,863,532	27.7	.25 " .61	.42
1859	13,317,967	7.2	.90 " 1.70	1.15	68,780,646	29.5	.60 " .90	.72
1860	23,640,356	13.8.	.93 " 1.38	1.17	91,588,704	38.2	.39 " .80	.50
1861	20,065,424	11.	.65 " 1.12	.83	74,938,878	33.5	.23 " .50	.34
1862	20,764,887	12.	.72 " 1.00	.86	62,704,887	30.	.27 " .40	.31
1863	20,432,410	11.36	.82 " 1.30	1.04	54,614,617	27.	.83 " .70	.53
1864	15,541,865	9.33	.96 " 2.12	1.41	54,033,491	27.	.63 " .1.29	1.03
1865	13,234,189	9.	1.25 " 2.07	1.78	68,032,668	35.	.66 " .1.29	.77
1866	5,521,747	4.5	1.75 " 2.60	2.27	80,396,320	38.5	.45 " .65	.54
1867	13,350,721	11.64	1.95 " 3.60	2.79	63,875,064	29.8	.67 " .98	.70
1868	16,480,669	11.81	1.90 " 2.65	2.31	76,725,258	34.4	.82 " 1.08	.92
1869	26,499,729	15.37	1.16 " 1.98	1.37	62,443,346	28.4	.57 " 1.10	.73
1870	13,726,341	11.29	1.08 " 1.33	1.15	88,345,239	37.5	.60 " 1.06	.88
1871	22,271,378	13.27	1.10 " 1.55	1.27	98,363,090	36.7	.50 " .79	.56
1872	15,987,664	11.22	1.13 " 2.08	1.58	103,054,224	40.9	.44 " .57	.49
1873	21,974,395	12.61	1.30 " 1.80	1.56	84,049,828	35.1	.39 " .50	.42
1874	26,906,316	14.51	1.03 " 1.60	1.38	101,815,494	39.8	.42 " .75	.60
1875	17,687,967	9.22	1.03 " 1.75	1.16	97,825,024	34.1	.58 " .87	.72
1876	15,354,569	10.18	1.00 " 1.50	1.10	112,552,642	36.8	.40 " .73	.51
1877	37,376,566	15.63	1.08 " 2.15	1.41	111,884,305	40.	.40 " .57	.46
1878	35,213,783	16.68	.85 " 1.35	1.11	114,839,107	37.8	.48 " .49	.42
1879	41,032,120	17.78	.86 " 1.15	.96	106,908,800	34.	.81 " .45	.37
1880	48,540,307	17.20	.88 " 1.37	1.16	105,414,504	38.9	.42 " .51	.48
1881	38,102,633	13.8	.83 " 1.39	1.10	78,712,796	31.	.40 " .87	.49
1882	42,112,108	15.59	.96 " 1.50	1.32	90,860,137	34.	.51 " .87	.72
1883	27,169,738	10.67	.95 " 1.17	1.03	64,001,618	24.2	.44 " .76	.54
1884	36,396,119	14.4	.80 " 1.10	1.01	87,797,813	33.3	.40 " .62	.63
1885	24,188,480	9.8	.72 " 1.09	.89	112,192,744	39.	.37 " .59	.47
1886	37,660,681	14.	.74 " 1.00	.88	88,818,566	33.5	.32 " .48	.39
1887	28,400,000	10.4	.71 " 1.00	.80	88,119,838	30.5	.31 " .55	.40
1888	28,100,904	11.7	.71 " .96	.86	111,166,606	36.9	.44 " .61	.52



TABLE SHOWING THE ANNUAL PRODUCTION AND PRICE OF WHEAT AND CORN FOR THE YEARS 1880 TO 1899, IN-  
CLUSIVE — Concluded.

Year.	Bushels of Wheat.	Average Number of Bushels Per Acres.	Price.		Bushels of Corn.	Average Number of Bushels Per Acres.	Price.	
			Range.	Average.			Range.	Average.
1880	81,633,448	14.6	.73 "	1.15	87,838,193	32.3	.30 "	.49
1881	81,509,676	13.8	.75 "	1.04	83,664,215	24.5	.37 "	.53
1882	45,063,490	17.5	.62 "	1.16	86,600,000	33	.49 "	.77
1883	40,254,621	14.4	.73 "	1.01	80,802,958	30.8	.39 "	.60
1884	46,545,258	17.2	.62 "	.98	67,681,125	25	.37 "	.45
1885	50,832,433	20	.48 "	.56	70,712,925	25	.35 "	.43
1886	24,520,930	11.9	.53 "	.90	96,263,789	23.9	.34 "	.56
1887	17,260,545	8.53	.55 "	.97	119,547,107	41	.73 "	.86
1888	38,194,666	17.67	.72 "	1.00	53,068,123	33.67	.28 "	.33
1889	42,263,161	15.82	.64 "	1.45	111,254,701	38	.27 "	.41
1890	41,961,704	15.1	.68 "	.77	106,462,757	36	.29 "	.40
1891								.36

TABLE SHOWING THE AVERAGE PRODUCTION AND PRICE OF WHEAT AND CORN BY DECADES.

Decades.	Average Bushels of Wheat.	Average Bushels per Acre.	Range of Price.	Average Price.	Average Bushels of Corn.	Average Bushels per Acre.	Range of Price.	Average Price.
1859 to 1869 inclusive .....	20,023,460	12.29	\$0 53 to \$2 00	\$1 00	64,920,860	33.4	\$0 24 to \$0 90	\$0 43
1870 to 1879 " .....	17,584,085	10.91	60 to 3 50	1 61	68,930,426	32.	27 to 1 29	64
1880 to 1889 " .....	24,553,959	13.29	85 to 2 15	1 27	90,986,129	36.5	38 to 1 05	54
1890 to 1899 " .....	34,738,945	13.21	71 to 1 50	1 00	90,991,979	33 5	30 to 87	45
1900 to 1909 " .....	38,042,980	15.19	48 to 1 45	.77	89,648,770	32.	18 to 77	39

**AVERAGE PRICES OF OTHER FARM PRODUCTS THAN WHEAT AND  
CORN IN THE LOCAL MARKETS OF OHIO FROM  
1855 TO 1899, INCLUSIVE.**

Year.	Barley.	Oats.	Rye.	Hay.	Potatoes.
1855.....	\$1 35	\$0 29½	\$0 70	\$14 71	.....
1856.....	1 58	46	01	21 00	.....
1857.....	58	36	58	18 46	.....
1858.....	67	57	82	15 38	.....
1859.....	76	43	96	17 73	.....
1860.....	69	27	56	12 62	.....
1861.....	60	30	48	11 85	.....
1862.....	1 36	58	78	16 34	.....
1863.....	1 51	78½	1 35	27 16	.....
1864.....	1 28	52	1 15	26 00	.....
1865.....	1 41	42	80	12 68	.....
1866.....	1 53	57	1 28	19 76	.....
1867.....	2 11	69	1 62	14 80	.....
1868.....	2 37	64	1 28	16 42	.....
1869.....	1 26	54	92	17 44	.....
1870.....	1 00	46	91	18 45	.....
1871.....	78	37	85	20 78	.....
1872.....	87	36	76	22 18	.....
1873.....	1 51	48	93	17 16	.....
1874.....	1 41	59	1 06	20 98	.....
1875.....	1 20	38	74	17 66	.....
1876.....	90	37	74	11 67	\$2 82
1877.....	52	29	59	9 86	1 44
1878.....	1 00	27	54	10 79	1 68
1879.....	89	34	82	15 87	1 16
1880.....	98	38	1 04	16 36	2 18
1881.....	1 06	50	94	17 90	3 30
1882.....	76	39	62	12 39	2 09
1883.....	76	34	62	11 63	1 47
1884.....	80	32	63	12 81	1 59
1885.....	66	30	63	12 16	1 54
1886.....	61	29	58	11 17	1 69
1887.....	81	33	62	14 79	2 74
1888.....	78	26	52	12 74	1 30
1889.....	57	27	50	19 56	1 67
1890.....	77	48	81	10 58	2 00
1891.....	70	33	85	11 25	1 45
1892.....	69	38	73	11 10	1 75
1893.....	64	32	55	12 55	2 39
1894.....	60	35	52	10 96	2 06
1895.....	56½	27	53	12 70	1 56
1896.....	34	20	36	12 88	65
1897.....	34	22	39	11 00	1 35
1898.....	47	27	51	8 65	1 68
1899.....	51	27	62	10 10	2 18
Average .....	0 93	0 39	0 77	14 98	1 87

Barley, Oats and Rye are rated per bushel; Hay rated per ton; Potatoes rated per barrel.

**TABULAR STATEMENT EXHIBITING THE NUMBER OF HORSES, CATTLE, MULES, SHEEP AND HOGS RETURNED  
BY THE SEVERAL COUNTY AUDITORS, FOR THE YEARS 1898 AND 1899.**

COUNTIES.	Number of Horses.		Number of Cattle.		Number of Mules.		Number of Sheep.		Number of Hogs.	
	1898.	1899.	1898.	1899.	1898.	1899.	1898.	1899.	1898.	1899.
Adams .....	4,426	4,503	9,114	9,716	189	181	7,897	8,784	14,202	12,943
Allen .....	8,377	8,225	13,324	13,640	98	112	17,705	19,193	24,638	23,517
Ashland .....	7,009	6,959	13,562	14,543	54	93	32,885	36,114	29,345	12,943
Ashabula .....	9,338	9,370	26,328	27,478	41	42	18,374	19,188	9,072	4,484
Athens .....	4,637	4,843	12,699	12,699	170	133	40,478	43,879	4,800	3,887
Auglaize .....	8,101	7,869	13,224	14,567	148	133	9,668	11,611	28,210	25,107
Belmont .....	8,480	8,928	10,127	20,331	370	313	72,001	76,542	14,551	11,644
Brown .....	6,567	6,591	10,784	12,306	213	200	12,225	12,315	23,827	25,164
Butler .....	10,677	10,472	13,711	14,668	453	450	7,482	10,687	25,868	21,161
Carroll .....	4,699	4,390	11,814	12,785	62	72	60,888	62,660	10,142	9,805
Champaign .....	10,068	9,860	14,568	17,188	143	148	23,573	22,419	34,406	27,798
Clark .....	11,371	11,004	15,769	17,896	299	190	27,449	23,602	39,404	27,798
Clermont .....	6,076	6,044	9,081	9,500	569	540	6,047	7,368	20,421	17,146
Clinton .....	9,002	8,735	13,386	14,083	322	310	25,474	24,608	37,867	33,138
Columbiana .....	9,503	9,384	19,456	20,005	85	95	80,706	80,622	12,920	11,511
Consocton .....	6,904	6,607	15,823	17,697	111	139	78,932	81,571	17,151	15,431
Crawford .....	8,232	8,237	15,229	16,018	79	68	42,534	34,768	34,768	27,451
Cuyahoga .....	16,624	18,729	15,768	16,142	114	57	6,757	7,022	2,637	2,176
Dake .....	14,590	14,552	20,531	22,213	317	290	6,870	6,753	42,910	38,870
Defiance .....	6,400	5,941	9,463	9,938	75	69	13,056	14,071	16,235	13,309
Delaware .....	7,194	7,310	15,766	16,929	55	57	42,646	44,202	26,111	23,346
Erie .....	5,385	4,789	7,923	6,934	22	7	12,575	10,943	8,205	4,021
Fairfield .....	10,117	10,019	17,210	19,474	134	124	16,796	16,925	41,218	38,008
Fayette .....	8,762	8,782	16,311	17,049	162	166	13,117	14,557	11,589	11,589
Franklin .....	14,667	14,564	17,587	18,427	131	101	11,042	11,953	29,743	22,276
Fulton .....	7,013	7,112	12,603	14,085	24	30	20,278	21,644	21,821	17,821

## ANNUAL STATEMENT EXHIBITING THE NUMBER OF HORSES, ETC. — Concluded.

COUNTIES.	Number of Horses.		Number of Cattle.		Number of Mules.		Number of Sheep.		Number of Hogs.	
	1898.	1899.	1898.	1899.	1898.	1899.	1898.	1899.	1898.	1899.
Gallia .....	4,682	4,892	10,325	11,900	234	207	14,788	15,425	9,020	7,387
Geauga .....	5,351	5,345	18,398	20,291	32	30	14,956	14,257	4,731	4,404
Greene .....	10,229	9,734	14,804	15,341	173	172	16,860	18,186	32,456	29,700
Guernsey .....	5,676	5,427	13,737	14,532	219	237	69,769	74,087	9,680	7,038
Hamilton .....	18,169	17,799	17,665	17,774	1,271	1,107	2,188	2,540	11,884	12,080
Hancock .....	10,544	10,200	19,716	20,698	99	80	33,086	35,355	43,340	37,999
Hardin .....	7,861	6,960	13,793	14,927	101	83	32,848	33,192	31,491	25,070
Harrison .....	4,798	4,671	11,497	11,924	54	60	100,162	103,803	7,741	6,150
Henry .....	6,481	6,678	11,101	12,111	67	53	8,787	8,628	17,340	15,298
Highland .....	8,284	8,027	15,039	16,577	207	214	21,075	23,817	37,277	33,687
Hocking .....	3,404	3,565	7,878	8,778	53	58	15,673	16,215	6,137	5,967
Holmes .....	6,491	6,851	15,455	17,486	73	83	27,926	30,336	22,716	20,049
Huron .....	8,171	8,183	13,026	14,224	95	89	53,508	53,931	15,701	13,051
Jackson .....	3,549	3,462	9,282	10,745	830	820	8,955	8,617	5,411	4,542
Jefferson .....	6,097	5,769	11,450	10,692	195	255	56,686	56,998	8,498	6,836
Knox .....	7,730	7,304	15,862	17,186	115	116	84,764	90,645	25,911	21,351
Lake .....	4,262	4,880	6,444	6,969	13	9	7,377	7,431	1,840	1,006
Lawrence .....	3,586	3,523	7,642	8,377	494	491	3,128	3,109	5,478	4,947
Licking .....	12,571	12,138	22,868	25,370	100	172	92,214	98,434	38,247	34,104
Logan .....	8,665	8,346	15,205	17,020	84	74	31,871	34,405	31,315	29,795
Lorain .....	9,099	9,097	20,138	21,185	76	38	24,447	27,290	8,955	7,760
Lucas .....	9,329	9,124	8,189	8,588	137	116	3,191	3,259	9,169	7,969
Madison .....	9,266	9,404	24,308	17,498	254	240	28,591	27,555	39,594	34,543
Marion .....	8,498	8,263	15,942	16,700	104	84	29,815	29,506	9,087	7,747
Marion .....	7,534	7,342	13,264	15,232	114	123	54,174	59,618	26,489	21,416
Medina .....	8,000	7,721	15,631	15,320	125	93	32,415	32,743	11,101	9,667
Meigs .....	5,345	5,304	10,280	10,778	222	218	28,357	30,244	5,882	4,733
Mercer .....	8,278	7,839	14,343	15,285	132	119	11,980	13,177	13,177	27,533
Miami .....	11,450	10,367	12,061	13,690	234	249	4,992	4,871	21,269	19,122
Monroe .....	4,965	4,764	11,966	13,115	88	48	16,441	17,826	7,111	5,069
Montgomery .....	16,757	15,759	18,376	19,444	227	215	3,128	3,153	23,871	21,093

### CROP AND OTHER STATISTICS.

Horses, decrease		13,577		Cattle, increase		95,867		Mules, decrease		952		Sheep, increase		106,208	
Hogs, decrease		244,462													
Morgan	4,080	4,764	12,871	13,096	45	59,070	65,214	7,440	5,272						
Arrow	7,201	7,262	13,285	14,490	69	69,369	69,701	18,806	10,339						
Muskingum	9,730	9,574	22,454	24,062	171	83,580	88,060	16,087	13,513						
Noble	4,183	4,183	12,613	14,206	57	45,822	53,167	10,181	7,743						
Ottawa	5,265	5,265	7,491	7,968	14	5,146	5,265	10,917	9,885						
Paulding	4,286	4,666	4,901	5,727	41	6,034	6,920	10,049	8,802						
Perry	5,457	5,457	13,030	14,063	100	26,817	27,497	12,267	10,692						
Pickaway	9,973	9,569	18,244	18,678	290	9,471	9,894	30,698	29,475						
Pike	4,029	4,265	4,849	5,623	203	3,890	4,691	8,677	7,614						
Portage	7,961	7,714	19,532	20,181	98	26,989	25,406	8,675	7,614						
Preble	9,073	9,310	14,072	15,281	255	7,190	7,702	33,693	31,066						
Putnam	8,433	8,470	14,364	16,118	50	10,384	12,452	35,755	34,890						
Richland	8,671	8,698	15,030	16,063	142	39,912	42,352	25,656	21,348						
Ross	10,954	10,477	17,432	19,197	156	12,277	12,254	36,408	24,136						
Sandusky	8,325	8,430	12,977	13,362	63	19,065	17,294	23,559	23,541						
Scioto	5,176	5,476	7,624	8,563	641	1,814	1,762	7,677	8,347						
Seneca	9,063	8,971	14,215	15,206	63	32,726	33,561	40,072	34,033						
Shelby	8,467	8,586	13,334	14,790	89	81	8,385	26,204	20,432						
Stark	14,218	13,975	25,383	26,352	327	26,230	25,690	26,341	22,508						
Summit	9,347	9,352	19,287	20,250	88	9,686	9,526	11,056	9,294						
Trumbull	10,659	10,564	29,374	31,509	98	29,868	29,016	7,523	6,579						
Tuscarawas	7,572	7,575	19,579	20,400	113	32,639	33,901	17,004	13,477						
Union	7,408	7,277	12,540	14,014	36	43,616	42,011	28,053	25,962						
Van Wert	8,571	7,790	10,824	11,278	152	13,336	14,063	24,963	22,073						
Vinton	2,632	2,578	5,766	6,685	101	19,067	18,380	3,324	3,393						
Warren	9,209	9,222	12,194	13,425	399	11,965	12,965	28,459	23,562						
Washington	7,890	7,476	13,894	17,268	171	178	37,824	9,808	7,008						
Wayne	11,115	10,888	22,730	24,060	182	181	26,451	31,690	27,255						
Williams	6,377	6,377	12,461	14,661	57	24,466	28,043	19,888	16,499						
Wood	11,731	10,883	14,730	17,483	101	17,598	17,745	37,613	34,026						
Wyandot	6,962	6,971	11,440	13,304	56	56,245	59,868	27,400	25,378						
Totals	717,742	704,165	1,265,664	1,361,251	15,080	2,404,568	2,512,761	1,794,014	1,649,552						
Horses, decrease										13,577		Cattle, increase		106,208	
Hogs, decrease										244,462					

# AGRICULTURAL STATISTICS, GATHERED IN MAY, 1899, AND REPORTED TO THE SECRETARY OF AGRICULTURE BY COUNTY AUDITORS.

## HORSES AND CATTLE—RURAL DISTRICTS.

Counties.	Horses.	Cattle.			
	Number owned in 1898.	Beef Cattle owned in 1898.	Milch Cows owned in 1898.	All other Cattle owned in 1898.	Total Number owned in 1898.
Adams .....	4,609	1,452	4,180	4,728	10,310
Allen .....	6,364	2,854	6,840	4,649	14,343
Ashland .....	6,193	1,854	6,892	4,520	12,775
Ashtabula .....	7,488	1,596	16,831	5,871	24,298
Athens .....	4,248	2,389	4,303	4,929	11,626
Auglaize .....	6,494	2,308	6,394	4,093	12,755
Belmont .....	6,573	4,922	8,323	6,620	19,565
Brown .....	0,157	2,450	5,800	5,305	18,244
Butler .....	7,182	2,619	7,208	2,865	12,692
Carroll .....	4,905	2,738	5,914	3,871	12,523
Champaign .....	7,990	4,584	6,354	7,224	16,162
Clark .....	7,321	4,162	6,090	5,820	16,072
Clermont .....	5,862	1,253	5,821	1,764	8,243
Clinton .....	7,011	3,888	4,583	4,911	12,437
Columbiana .....	7,296	1,841	11,059	4,152	17,652
Coshocton .....	6,308	3,608	6,133	5,797	15,568
Crawford .....	6,580	2,261	6,815	5,450	14,526
Cuyahoga .....	7,586		11,014	3	11,017
Darke .....	12,910	2,546	10,715	9,186	22,397
Defiance .....	5,447	2,113	5,303	2,642	10,063
Delaware .....	6,490	3,519	6,577	5,181	15,277
Eric .....	3,689	731	8,916	1,822	6,463
Fairfield .....	8,604	4,236	7,129	6,188	17,553
Fayette .....	6,196	7,742	3,623	4,141	15,506
Franklin .....	8,966	2,028	10,065	3,603	15,731
Fulton .....	6,078	1,717	7,692	2,142	11,551
Gallia .....	4,623	2,145	4,924	4,194	11,273
Geauga .....	4,981	825	13,820	3,854	18,499
Greene .....	6,664	2,450	5,900	3,932	12,282
Guernsey .....	5,368	3,914	6,280	5,722	15,016
Hamilton .....	18,207	17,412	4,801		22,213
Hancock .....	8,888	3,969	8,593	6,866	19,438
Hardin .....	5,352	2,681	5,537	4,355	12,573
Harrison .....	4,832	2,560	4,920	5,143	12,632
Henry .....	6,523	1,863	6,706	3,268	11,837
Highland .....	6,886	3,200	5,700	5,773	14,773
Hocking .....	3,799	1,378	8,563	4,962	9,893
Holmes .....	7,768	2,172	6,618	5,664	14,454
Huron .....	7,065	2,640	6,909	3,275	12,824
Jackson .....	3,021	1,247	3,301	6,065	10,613
Jefferson .....	4,233	1,937	6,069	3,447	11,443
Knox .....	6,460	2,744	6,533	6,284	15,561
Lake .....	3,548	566	3,756	1,675	6,000
Lawrence .....	2,673	1,569	2,696	3,066	7,359
Licking .....	10,619	4,831	9,708	8,918	23,455
Logan .....	7,119	3,177	6,408	5,823	15,413
Lorain .....	6,846	1,778	12,194	3,659	17,631
Lucas .....	4,940	392	5,447	747	6,594
Madison .....	7,353	5,569	4,736	4,978	15,299
Mahoning .....	5,846	2,371	8,743	3,667	14,774
Marion .....	5,774	3,379	4,596	4,205	12,190
Medina .....	6,874	1,275	9,365	4,060	14,690
Meigs .....	4,762	2,420	4,199	3,759	10,379
Mercer .....	6,995	1,419	6,602	5,299	13,321
Miami .....	7,197	1,528	5,278	3,729	10,535

## HORSES AND CATTLE—RURAL DISTRICTS—Concluded.

Counties.	Horses.	Cattle.			
	Number owned in 1886.	Beef Cattle owned in 1886.	Milch Cows owned in 1886.	All other Cattle owned in 1886.	Total Number owned in 1886.
Monroe .....	9,075	2,201	7,436	4,972	14,609
Montgomery .....	9,185	1,763	9,625	4,037	15,475
Morgan .....	5,024	3,729	5,031	6,114	14,874
Morrow .....	7,103	2,757	5,204	5,961	13,922
Muskingum .....	7,358	5,139	8,610	9,756	23,505
Noble .....	4,266	3,702	4,745	4,636	13,083
Ottawa .....	4,572	557	4,808	1,430	6,790
Paulding .....	5,373	914	3,903	2,271	7,068
Perry .....	4,573	2,816	4,623	5,642	13,081
Pickaway .....	5,751	3,643	3,870	4,560	12,073
Pike .....	3,606	804	2,264	2,396	5,454
Portage .....	6,626	1,734	12,843	4,338	18,915
Preble .....	7,692	2,735	6,612	4,758	14,105
Putnam .....	7,331	1,924	7,019	4,187	13,130
Richland .....	7,143	2,496	7,453	4,531	14,480
Ross .....	7,521	5,848	4,350	7,430	17,628
Sandusky .....	7,392	1,771	7,256	2,497	11,524
Scioto .....	3,443	874	3,296	2,595	6,765
Seneca .....	7,882	2,184	7,850	3,011	13,045
Shelby .....	6,976	1,485	6,971	5,145	13,691
Stark .....	8,727	2,162	13,128	6,688	21,924
Summit .....	6,281	2,790	11,596	3,811	18,197
Trumbull .....	8,520	2,760	16,420	7,549	26,729
Tuscarawas .....	6,704	3,478	10,615	6,640	20,733
Union .....	6,776	2,793	5,234	3,898	11,920
Van Wert .....	6,816	1,220	5,237	3,777	10,234
Vinton .....	2,644	1,523	2,726	3,561	7,835
Warren .....	6,537	1,477	5,304	4,209	10,990
Washington .....	6,795	2,588	7,490	5,993	16,061
Wayne .....	9,273	3,343	11,080	8,208	22,640
Williams .....	6,218	1,946	5,614	3,490	11,050
Wood .....	9,045	3,258	8,906	3,674	15,837
Wyandot .....	5,503	1,968	5,153	3,028	10,167
Totals .....	574,550	235,367	601,565	397,655	1,234,587



## AGRICULTURAL REPORT

## SHEEP AND WOOL.

Counties.	Sheep.					Wool.
	Number owned, 1898.	Killed by Dogs.		Injured by Dogs.		Pounds shorn, 1898.
		Number, 1898.	Value, 1898.	Number, 1898.	Value, 1898.	
Adams	8,618	81	\$381 00	89	\$130 00	49,291
Allen	20,534	122	554 00	129	892 00	101,433
Ashtabula	33,320	167	553 00	108	227 00	812,500
Ashland	16,720	234	1,119 00	105	347 00	95,081
Athens	46,018	370	1,151 00	135	294 00	244,080
Auglaize	9,697	189	764 00	110	343 00	58,756
Belmont	71,320	311	974 00	300	215 00	387,709
Brown	10,051	191	639 00	122	365 00	53,080
Butler	6,788	138	640 00	20	107 00	37,791
Carroll	62,675	287	902 00	147	314 00	324,576
Champaign	25,447	73	282 00	98	268 00	126,897
Clark	81,476	115	820 00	121	524 00	153,424
Clermont	7,568	242	735 00	59	220 00	33,582
Clinton	23,342	181	739 00	100	314 00	132,597
Columbiana	34,462	557	1,725 00	267	624 00	176,251
Coshocton	74,626	543	2,128 00	335	552 00	452,528
Crawford	41,360	225	708 00	130	279 00	220,367
Cuyahoga	222	95	586 00	38	170 00	31,282
Darke	6,118	130	621 00	85	264 00	38,301
Defiance	12,737	107	483 00	132	267 00	74,626
Delaware	37,920	229	888 00	88	228 00	221,301
Erie	10,046	19	62 00	11	28 00	63,289
Fairfield	16,117	257	1,170 00	181	495 00	91,616
Fayette	11,732	62	189 00	44	102 00	37,537
Franklin	8,251	99	411 00	72	170 00	57,571
Fulton	16,295	106	286 00	16	52 00	127,984
Gallia	17,005	505	1,480 00	124	185 00	72,843
Geauga	15,114	81	119 00	25	69 00	82,311
Greene	13,556	129	523 00	51	188 00	94,133
Guernsey	67,182	551	1,502 00	319	459 00	398,901
Hamilton	2,544	35	107 00	22	82 00	6,024
Hancock	32,265	172	726 00	105	297 00	194,200
Hardin	28,662	173	1,066 00	234	370 00	155,790
Harrison	100,303	266	838 00	146	286 00	530,209
Henry	8,143	109	437 00	94	210 00	49,356
Highland	21,217	193	785 00	59	163 00	109,426
Hocking	17,740	138	395 00	90	170 00	86,158
Holmes	23,359	110	436 00	44	81 00	142,832
Huron	52,053	277	1,065 00	147	330 00	293,236
Jackson	15,045	193	517 00	90	195 00	41,888
Jefferson	52,835	448	1,598 00	375	317 00	314,497
Knox	84,824	179	744 00	189	540 00	498,445
Lake	5,672	191	674 00	54	154 00	24,658
Lawrence	3,312	46	153 00	2	12 00	11,348
Licking	92,890	791	1,858 00	349	729 00	543,343
Logan	30,369	154	514 00	127	238 00	176,567
Lorain	22,617	174	749 00	64	115 00	118,695
Lucas	1,797	133	433 00	126	103 00	13,416
Madison	29,323	297	1,298 00	252	1,028 00	150,909
Mahoning	28,681	220	1,176 00	166	271 00	132,501
Marion	56,906	156	456 00	101	200 00	360,904
Medina	30,744	210	2,713 00	66	940 00	180,121
Meigs	26,233	312	1,552 00	111	349 00	143,743
Mercer	9,722	41	190 00	274	64 00	62,504
Miami	3,691	41	200 00	65	187 00	20,255
Monroe	18,468	202	786 00	109	214 00	92,446
Montgomery	3,115	14	69 00	.....	.....	15,400
Morgan	68,797	296	832 00	308	427 00	839,885
Morrow	63,868	263	825 00	211	398 00	848,115
Muskingum	80,011	640	1,870 00	484	752 00	450,004
Noble	46,341	288	1,144 00	170	407 00	258,796
Ottawa	4,408	55	206 00	29	56 00	28,259
Paulding	6,226	268	778 00	134	379 00	35,192
Perry	24,962	192	649 00	109	215 00	143,651
Pickaway	1,232	85	439 00	59	194 00	35,951
Pike	3,977	60	210 00	46	653 00	20,547
Portage	26,299	184	774 00	156	251 00	122,835
Preble	6,763	145	663 00	72	352 00	39,887
Putnam	9,491	304	1,354 00	193	600 00	53,571
Richland	39,295	180	695 00	132	309 00	218,367
Ross	12,249	306	909 00	113	219 00	55,116

## SHEEP AND WOOL—Concluded.

Counties.	Sheep.					Wool.
	Number owned, 1898.	Killed by Dogs.		Injured by Dogs.		Pounds shorn, 1898.
		Number, 1898.	Value, 1898.	Number, 1898.	Value, 1898.	
Sandusky .....	16,717	79	298 00	79	158 00	83,572
Scioto .....	1,370	33	126 00	35	94 00	5,768
Seneca .....	31,250	389	1,679 00	152	504 00	174,341
Shelby .....	6,713	61	250 00	247	32 00	38,368
Stark .....	23,227	252	866 00	211	601 00	130,455
Summit .....	8,901	125	688 00	37	107 00	48,018
Trumbull .....	27,798	400	1,760 00	422	776 00	143,291
Tuscarawas .....	31,346	354	1,175 00	96	295	151,658
Union .....	41,238	177	721 00	120	192 00	203,216
Van Wert .....	12,740	111	557 00	89	192 00	74,896
Vinton .....	20,202	162	431 00	85	189 00	104,481
Warren .....	8,121	167	425 00	53	132 00	70,676
Washington .....	33,427	365	1,078 00	204	311 00	199,010
Wayne .....	24,120	163	734 00	27	61 00	133,238
Williams .....	25,876	223	935 00	698	966 00	166,295
Wood .....	14,257	157	585 00	72	208 00	75,567
Wyandot .....	51,150	115	379 00	79	110 00	286,275
Totals .....	2,330,941	18,244	\$69,083 00	11,874	\$26,492 00	13,104,374

## DOMESTIC ANIMALS DIED FROM DISEASES.

Counties.	Hogs.		Sheep.		Cattle.		Horses.	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.
Adams .....	722	\$2,755 00	412	\$1,484 00	138	\$2,854 00	102	\$4,155 00
Allen .....	3,558	12,160 00	414	1,661 00	156	3,225 00	92	4,965 00
Ashland .....	450	2,286 00	1,088	3,559 00	180	3,833 00	209	7,626 00
Ashtabula .....	212	1,114 00	762	2,623 00	310	6,474 00	117	5,229 00
Athens .....	205	866 00	802	1,990 00	100	1,666 00	45	1,740 00
Auglaize .....	3,213	10,073 00	350	1,296 00	159	3,453 00	149	7,520 00
Belmont .....	343	1,600 00	1,651	3,370 00	277	5,483 00	120	4,690 00
Brown .....	1,837	6,517 00	704	2,528 00	186	4,346 00	99	3,700 00
Butler .....	11,165	43,653 00	325	1,316 00	282	7,303 00	220	11,690 00
Carroll .....	145	698 00	1,617	3,401 00	123	2,864 00	74	3,717 00
Champaign .....	11,234	40,313 00	1,038	2,919 00	215	6,545 00	198	7,723 00
Clark .....	5,400	19,232 00	434	2,520 00	160	3,904 00	127	6,683 00
Clermont .....	1,356	5,533 00	256	1,082 00	168	4,267 00	123	4,963 00
Clinton .....	13,109	44,185 00	1,103	3,705 00	192	4,791 00	104	4,184 00
Columbiana .....	321	1,461 00	1,295	3,010 00	250	7,141 00	151	5,865 00
Coshocton .....	386	1,734 00	2,470	5,211 00	170	3,666 00	102	4,570 00
Crawford .....	8,713	27,403 00	984	2,777 00	158	3,554 00	115	5,735 00
Cuyahoga .....	321	1,707 00	247	980 00	204	6,725 00	131	6,811 00
Darke .....	15,540	51,523 00	251	1,204 00	370	8,546 00	223	11,262 00
Defiance .....	4,013	8,892 00	324	1,239 00	100	2,422 00	101	5,030 00
Delaware .....	2,701	9,445 00	903	2,806 00	173	3,615 00	180	10,536 00
Eric .....	3,768	17,275 00	201	577 00	98	2,687 00	78	4,320 00
Fairfield .....	3,579	13,420 00	505	1,879 00	162	4,609 00	124	5,653 00
Fayette .....	16,493	46,087 00	965	1,925 00	182	5,007 00	136	5,563 00
Franklin .....	3,411	13,130 00	324	1,036 00	261	6,243 00	267	9,857 00
Fulton .....	0,009	22,653 00	436	1,536 00	106	2,637 00	114	6,978 00
Gallia .....	356	1,456 00	903	2,492 00	236	2,777 00	111	3,021 00
Geauga .....	160	774 00	582	1,897 00	250	6,802 00	64	3,010 00
Greene .....	7,129	27,899 00	606	2,181 00	201	4,973 00	178	8,157 00
Guernsey .....	220	909 00	1,989	3,932 00	213	3,422 00	79	2,715 00
Hamilton .....	1,161	3,971 00	125	423 00	134	2,935 00	121	4,150 00
Hancock .....	4,931	19,217 00	660	2,239 00	220	5,792 00	131	6,120 00
Hardin .....	9,205	31,703 00	511	1,570 00	156	3,496 00	120	5,390 00
Harrison .....	99	580 00	1,521	3,564 00	163	3,588 00	52	2,550 00
Henry .....	5,940	20,468 00	410	1,611 00	266	5,860 00	157	9,001 00
Highland .....	8,153	25,432 00	1,152	4,157 00	174	4,105 00	106	4,677 00
Hocking .....	357	1,674 00	694	1,244 00	149	2,581 00	89	3,495 00
Holmes .....	328	1,329 00	962	3,300 00	170	3,173 00	91	3,807 00
Huron .....	1,884	6,728 00	1,255	3,803 00	147	4,052 00	104	5,070 00
Jackson .....	239	1,076 00	733	1,753 00	118	2,488 00	42	1,524 00
Jefferson .....	184	883 00	1,626	3,744 00	159	3,434 00	110	3,895 00
Knox .....	2,216	9,278 00	2,074	4,504 00	170	4,524 00	92	5,050 00
Lake .....	29	187 00	278	669 00	22	750 00	18	2,290 00
Lawrence .....	229	1,065 00	79	216 00	120	1,997 00	58	1,895 00
Licking .....	1,449	5,366 00	3,066	7,443 00	223	5,825 00	164	6,850 00
Logan .....	7,459	26,306 00	1,030	3,041 00	200	4,323 00	150	6,992 00
Lorain .....	241	1,251 00	535	1,997 00	169	4,602 00	86	4,725 00
Lucas .....	2,483	10,533 00	115	366 00	169	4,786 00	140	6,760 00
Madison .....	16,335	51,475 00	1,514	4,398 00	164	4,805 00	189	9,159 00
Mahoning .....	256	1,358 00	1,202	3,237 00	226	5,435 00	101	5,335 00
Marion .....	9,937	33,929 00	1,662	4,444 00	150	3,658 00	116	5,710 00
Medina .....	189	1,023 00	906	3,357 00	171	4,745 00	71	3,675 00
Meigs .....	156	1,304 00	603	1,524 00	105	1,939 00	55	1,845 00
Mercer .....	7,675	24,605 00	553	1,802 00	211	4,092 00	109	4,877 00
Miami .....	1,924	8,579 00	129	622 00	163	3,894 00	108	5,620 00
Monroe .....	252	1,223 00	596	1,520 00	164	3,142 00	97	3,858 00
Montgomery .....	5,072	18,175 00	168	626 00	380	7,639 00	214	11,457 00
Morgan .....	151	694 00	888	1,824 00	118	2,661 00	44	2,240 00
Morrow .....	501	2,954 00	707	1,795 00	125	3,081 00	73	3,875 00
Muskingum .....	327	1,565 00	2,026	4,183 00	223	4,723 00	89	3,858 00
Noble .....	238	976 00	953	2,097 00	154	2,960 00	55	2,205 00
Ottawa .....	1,045	3,345 00	76	310 00	131	2,778 00	70	3,290 00
Paulding .....	3,502	12,958 00	289	1,132 00	116	2,952 00	122	4,805 00
Perry .....	150	724 00	369	753 00	117	2,591 00	56	2,250 00
Pickaway .....	3,959	12,947 00	339	1,324 00	147	3,047 00	100	4,920 00
Pike .....	2,350	8,610 00	333	911 00	91	2,000 00	125	4,134 00
Portage .....	271	1,306 00	1,206	3,691 00	300	8,660 00	105	5,421 00
Preble .....	5,022	19,542 00	260	1,517 00	191	4,784 00	128	6,580 00
Putnam .....	13,605	45,201 00	489	1,762 00	207	4,690 00	152	7,893 00
Richland .....	3,951	15,653 00	737	2,568 00	177	4,486 00	142	8,175 00
Ross .....	9,767	31,506 00	971	2,789 00	224	5,921 00	220	9,582 00
Sandusky .....	4,399	20,714 00	748	2,451 00	173	4,513 00	120	6,690 00

## DOMESTIC ANIMALS DIED FROM DISEASES—Concluded.

Counties.	Hogs.		Sheep.		Cattle.		Horses.	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.
Scioto .....	587	2,523 00	85	249 00	141	2,216 00	101	8,894 00
Seneca .....	6,409	20,526 00	711	2,646 00	236	4,848 00	173	8,923 00
Shelby .....	9,861	25,497 00	226	748 00	208	4,011 00	141	6,272 00
Stark .....	895	3,924 00	1,498	5,076 00	462	8,475 00	249	12,777 00
Summit .....	1,064	4,889 00	301	906 00	280	7,511 00	123	6,098 00
Trumbull .....	282	1,690 00	1,158	3,216 00	878	10,302 00	120	4,757 00
Tuscarawas .....	470	1,920 00	766	2,095 00	256	5,413 00	128	6,643 00
Union .....	9,114	28,789 00	2,154	5,343 00	163	4,119 00	124	6,798 00
Van Wert .....	1,535	5,298 00	478	1,812 00	154	3,438 00	124	5,500 00
Vinton .....	187	847 00	282	633 00	70	1,643 00	41	1,650 00
Warren .....	7,092	29,699 00	539	2,290 00	229	5,332 00	154	7,109 00
Washington .....	403	1,849 00	1,028	2,433 00	171	3,075 00	136	3,661 00
Wayne .....	787	3,268 00	1,096	4,298 00	275	5,929 00	196	11,720 00
Williams .....	3,925	12,018 00	739	2,730 00	168	3,871 00	117	5,949 00
Wood .....	7,989	42,049 00	683	2,436 00	239	6,543 00	219	13,675 00
Wyandot .....	4,250	15,972 00	1,052	3,066 00	111	2,206 00	87	4,455 00
Totals .....	317,298	\$1125,415 00	70,983	\$204,834 00	16,445	\$381,768 00	10,628	\$499,352 00

## WHEAT, RYE AND BUCKWHEAT.

Counties.	Wheat.			Rye.			Buckwheat.	
	Acres sown for Harvest, 1898.	Bushels produced, 1898.	Acres sown for Harvest, 1899.	Acres sown for 1898.	Bushels produced, 1898.	Acres sown for 1899.	Acres sown, 1898.	Bushels produced, 1898.
Adams .....	25,784	304,058	29,127	349	2,649	292	16	90
Allen .....	27,695	400,588	32,606	171	2,552	123	19	221
Ashland .....	34,883	521,222	36,767	253	2,935	161	98	747
Ashtabula .....	15,000	291,870	15,258	543	6,671	268	8,396	65,137
Athens .....	13,420	181,279	16,130					
Auglaize .....	35,373	509,909	43,555	330	3,600	70	30	319
Belmont .....	26,458	356,622	27,794	165	1,529	86	192	1,961
Brown .....	35,862	353,060	32,367	800	4,501	744	15	196
Butler .....	59,654	1,065,347	66,638	78	886	93		
Carroll .....	16,804	274,745	17,913	211	2,277	112	119	1,872
Champaign .....	45,838	648,804	52,407	201	2,018	150	59	809
Clark .....	38,567	625,155	46,343	208	2,174	237	11	90
Clermont .....	23,899	269,413	27,157	1,274	9,462	759	35	462
Clinton .....	40,755	572,322	47,280	274	3,862	108	21	148
Columbiana .....	21,576	423,274	23,821	201	2,502	140	134	2,165
Coshocton .....	32,031	437,704	36,019	575	5,562	206	124	1,911
Crawford .....	27,899	463,157	31,587	125	1,519	67	43	701
Cuyahoga .....	10,656	219,437	12,001	48	9,205	363	8	84
Darke .....	67,524	1,065,613	77,444	647	8,735	351	62	847
Defiance .....	23,788	377,332	36,759	241	2,221	121	157	1,915
Delaware .....	21,306	279,802	28,068	275	2,343	137	90	921
Erie .....	18,841	354,051	21,876	360	3,893	204	281	3,482
Fairfield .....	50,243	736,966	54,669	385	3,853	163	44	676
Fayette .....	42,021	637,272	49,225	159	1,342	85	2	25
Franklin .....	43,492	598,342	50,035	423	3,581	228	47	801
Fulton .....	26,777	512,947	33,893	488	6,498	213	373	5,491
Gallia .....	23,190	268,480	26,857	121	1,024	31	11	119
Geauga .....	10,115	201,198	10,410	188	1,829	32	260	5,028
Greene .....	48,435	709,532	54,913	121	1,289	29	21	129
Guernsey .....	19,064	261,054	22,209	311	1,551	80	110	1,617
Hamilton .....	16,110	289,073	19,437	806	12,000	491	23	176
Hancock .....	46,400	759,325	54,400	299	3,887	204	24	413
Hardin .....	29,527	396,011	40,710	208	3,642	166	31	314
Harrison .....	14,108	226,375	15,139	70	559	51	41	570
Henry .....	37,434	676,004	44,127	2,291	43,195	891	163	3,567
Highland .....	44,472	549,559	48,909	612	3,702	330	14	197
Hocking .....	15,902	218,415	31,362	170	1,840	109	148	2,137
Holmes .....	28,170	435,711	29,574	464	7,042	323	76	762
Huron .....	30,414	508,725	37,097	229	2,861	184	140	1,966
Jackson .....	14,057	163,863	17,619	17	146	27	146	2,254
Jefferson .....	16,624	272,065	17,843	46	410	27	48	760
Knox .....	35,188	543,823	39,972	574	5,032	218	86	1,043
Lake .....	6,060	107,577	6,328	340	5,073	231	65	955
Lawrence .....	9,539	97,307	12,608	56	264	48	17	93
Licking .....	42,660	634,725	49,021	1,573	12,721	721	168	3,059
Logan .....	31,116	414,629	38,501	369	4,267	241	55	813
Lorain .....	23,431	393,965	24,046	89	1,245	31	17	333
Lucas .....	15,898	332,387	17,365	835	11,029	426	623	8,327
Madison .....	39,738	655,771	48,278	86	355	60	4	54
Mahoning .....	16,700	326,816	17,166	253	2,959	63	163	1,713
Marion .....	23,771	350,654	31,952	83	1,770	71	25	543
Medina .....	25,398	452,980	27,179	470	5,094	232	53	1,050
Meigs .....	19,631	264,008	25,740	146	1,003	107	35	821
Mercer .....	33,137	446,749	44,063	579	6,060	198	26	889
Miami .....	47,414	861,354	48,419	221	1,995	85	3	57
Monroe .....	20,490	241,987	24,696	302	3,284	155	292	4,675
Montgomery .....	45,896	612,677	46,862	164	1,785	107	18	146
Morgan .....	16,164	206,117	18,789	43	349	45	53	874
Morrow .....	18,746	288,965	22,032	321	3,237	159	62	1,100
Muskingum .....	30,524	484,467	32,777	589	3,436	268	49	597
Noble .....	15,271	171,001	17,610	93	342	29	43	501
Ottawa .....	19,712	326,944	22,442	274	4,347	112	14	257
Paulding .....	18,530	302,536	28,033	524	9,060	273	240	3,187
Perry .....	20,870	329,685	22,958	96	907	60	130	2,384
Pickaway .....	54,257	800,881	58,812	84	1,178	29		
Pike .....	30,342	258,229	24,916	169	1,410	108	96	1,525
Portage .....	22,999	457,596	22,371	271	4,020	43	418	6,007

## WHEAT, RYE AND BUCKWHEAT — Concluded.

Counties.	Wheat.			Rye.			Buckwheat.	
	Acres sown for Harvest, 1888.	Bushels produced, 1888.	Acres sown for Harvest, 1889.	Acres sown for 1888.	Bushels produced, 1888.	Acres sown for 1889.	Acres sown, 1888.	Bushels produced, 1888.
Preble .....	57,501	922,193	51,593	167	1,644	111	27	151
Putnam .....	42,792	643,313	53,229	311	5,371	173	61	602
Richland .....	39,892	615,171	41,915	557	6,138	250	90	1,414
Ross .....	49,417	760,329	55,429	268	3,296	229	57	605
Sandusky .....	39,158	697,025	45,575	204	2,762	102	61	903
Scioto .....	20,124	238,828	23,765	52	716	53	98	1,445
Seneca .....	52,252	891,059	61,575	131	1,700	54	21	279
Shelby .....	40,205	505,042	47,571	363	4,205	253	133	3,496
Stark .....	50,011	993,695	50,818	347	3,837	122	77	1,099
Summit .....	28,445	614,415	30,712	168	3,406	107	91	937
Trumbull .....	16,464	296,383	16,070	321	3,670	79	913	16,693
Tuscarawas .....	32,600	515,940	35,395	268	3,218	119	130	1,568
Union .....	24,103	292,458	31,259	255	1,742	110	120	1,197
Van Wert .....	33,639	559,256	36,877	431	6,351	156	110	1,367
Vinton .....	11,385	134,096	12,598	69	446	53	96	1,046
Warren .....	35,431	529,844	41,371	269	2,070	207	17	195
Washington .....	29,309	394,064	35,163	194	1,381	99	167	2,610
Wayne .....	51,951	697,836	55,483	169	1,322	75	40	835
Williams .....	20,594	352,437	32,765	261	3,444	255	136	1,779
Wood .....	41,531	796,772	48,961	466	5,501	151	92	1,331
Wyandot .....	26,906	423,694	32,102	217	2,609	76	36	420
Totals .....	2,637,788	41,041,671	3,080,865	23,737	339,768	15,871	11,974	191,684

## OATS, BARLEY AND CORN.

Counties.	Oats.			Barley.			Corn.		
	Acres sown, 1898.	Bushels produced, 1898.	Acres sown for 1899.	Acres sown for 1898.	Bushels produced, 1898.	Acres sown for 1899.	Acres planted, 1898.	Bushels (shelled) produced, 1898.	Acres planted, estimated, for Cro of 1899.
Adams .....	1,795	21,438	1,110	.....	.....	.....	37,523	1,013,713	35,479
Allen .....	9,306	281,999	7,558	183	2,757	274	34,366	1,209,899	30,625
Ashland .....	16,151	587,134	15,884	110	2,798	95	24,198	908,280	22,319
Ashtabula .....	22,144	658,504	16,046	62	962	18	17,478	690,001	14,815
Athens .....	1,401	26,205	914	.....	.....	.....	16,391	515,325	14,575
Auglaize .....	12,167	387,136	9,856	108	3,304	149	42,256	1,554,545	39,846
Belmont .....	5,920	133,704	5,204	98	1,381	51	24,730	1,064,474	22,624
Brown .....	4,288	69,482	3,969	.....	.....	.....	47,210	1,249,513	43,785
Butler .....	5,004	119,349	4,000	574	20,695	691	51,534	2,069,862	50,880
Carroll .....	14,148	364,044	12,189	6	36	27	14,869	530,805	13,635
Champaign .....	8,122	262,064	5,773	65	1,345	10	55,074	2,448,256	52,966
Clark .....	4,868	159,362	3,738	5	144	7	48,792	2,118,612	45,233
Clermont .....	6,922	119,974	4,899	19	140	4	37,910	1,042,754	34,415
Clinton .....	2,216	53,357	1,331	27	585	14	53,061	2,453,512	58,908
Columbiana .....	21,827	599,204	18,778	59	700	81	18,860	800,515	17,335
Coshocton .....	9,010	214,135	7,578	17	279	40	27,855	1,119,201	24,107
Crawford .....	20,901	809,861	20,174	182	5,179	112	36,130	151,134	34,730
Cuyahoga .....	15,074	573,362	14,305	8	530	16	11,226	468,740	10,516
Darke .....	17,213	567,625	14,238	609	14,860	423	80,929	3,424,966	70,783
Defiance .....	17,816	630,983	22,297	955	27,287	1,065	28,784	1,052,589	20,408
Delaware .....	12,820	356,958	10,227	.....	.....	.....	38,791	1,522,213	38,420
Erie .....	12,904	464,848	11,139	575	16,019	400	17,085	691,450	15,617
Fairfield .....	8,080	77,676	1,908	23	460	73	53,920	2,012,381	79,250
Fayette .....	977	30,030	5,505	6	172	16	56,972	2,396,045	71,667
Franklin .....	9,688	265,306	7,502	.....	.....	.....	62,948	2,332,135	50,937
Fulton .....	37,366	770,624	26,965	446	12,432	792	31,457	1,305,561	33,173
Galia .....	1,833	23,854	1,038	7	10	8	25,443	673,596	22,297
Geauga .....	12,494	451,331	12,886	9	237	22	10,352	417,657	10,284
Greene .....	3,984	107,115	2,384	14	395	7	52,752	2,553,818	50,064
Guernsey .....	6,578	132,193	5,361	25	270	24	21,641	522,388	18,093
Hamilton .....	2,402	45,988	1,464	171	4,251	192	19,866	642,954	16,676
Hancock .....	10,186	370,101	10,432	231	5,765	624	52,916	1,891,306	51,997
Hardin .....	9,147	309,339	8,427	12	250	87	40,533	1,440,065	61,908
Harrison .....	6,878	165,202	4,533	73	1,204	116	14,284	646,208	12,384
Henry .....	10,210	416,536	19,692	1,479	42,163	3,284	52,047	2,217,175	58,958
Highland .....	937	14,254	631	.....	.....	.....	51,233	1,061,806	46,493
Hocking .....	1,232	18,303	869	1	10	1	17,043	519,824	15,001
Holmes .....	15,658	416,464	15,001	42	638	23	21,230	890,545	20,344
Huron .....	26,417	937,234	24,966	484	9,973	206	31,065	1,223,828	28,552
Jackson .....	622	8,053	484	3	5	.....	16,404	432,326	13,956
Jefferson .....	10,523	279,982	9,979	62	1,142	71	14,481	638,230	13,430
Knox .....	10,570	309,216	9,501	22	580	31	35,349	1,399,337	32,980
Lake .....	6,498	214,113	6,054	18	314	22	6,300	246,321	5,784
Lawrence .....	2,973	34,878	2,089	.....	.....	.....	18,846	466,115	16,879
Licking .....	12,281	312,913	9,315	13	245	4	54,614	2,167,822	50,583
Logan .....	7,608	231,857	6,148	25	855	54	44,108	1,713,214	41,210
Lorain .....	21,619	807,259	20,667	94	2,308	106	20,301	794,892	17,993
Lucas .....	12,359	466,114	15,684	358	10,965	610	20,863	950,242	22,169
Madison .....	5,181	143,780	4,529	19	250	24	77,564	2,871,614	72,386
Mahoning .....	16,380	507,861	15,770	26	540	6	16,586	644,498	16,832
Marion .....	16,642	589,409	13,806	46	359	74	46,642	1,825,765	43,263
Medina .....	21,235	804,636	19,333	115	2,372	161	21,254	830,665	19,398
Meigs .....	2,585	46,782	1,642	.....	.....	.....	20,804	559,523	15,150
Mercer .....	20,063	629,134	17,720	294	6,350	338	44,270	1,566,640	41,784
Miami .....	11,987	441,606	8,624	125	3,346	49	44,804	2,112,438	40,817
Monroe .....	6,129	102,733	4,770	.....	.....	.....	19,068	634,108	17,847
Montgomery .....	9,922	313,478	7,742	90	2,987	110	47,608	1,918,425	42,575
Morgan .....	1,911	42,942	1,306	5	65	15	17,513	589,811	15,251
Morrow .....	15,364	541,713	14,408	.....	.....	.....	29,639	1,239,920	27,066
Muskingum .....	4,722	95,445	3,737	15	200	21	33,021	1,175,889	28,801
Noble .....	2,906	59,972	.....	.....	.....	.....	17,928	572,268	17,102
Ottawa .....	7,996	278,361	10,666	1,924	46,883	1,894	20,780	683,287	21,543
Paulding .....	11,019	421,621	19,182	2,392	74,924	4,017	42,959	1,673,118	42,596
Perry .....	1,258	24,596	741	1	25	.....	19,407	666,205	18,077
Pickaway .....	776	18,707	340	.....	.....	.....	63,828	2,300,028	60,671
Pike .....	761	8,641	340	.....	.....	.....	25,728	830,235	24,142
Portage .....	19,166	688,584	18,351	14	320	8	16,395	646,067	14,607

## OATS, BARLEY AND CORN—Concluded.

Counties.	Oats.			Barley.			Corn.		
	Acres sown, 1898.	Bushels produced, 1898.	Acres sown for 1899.	Acres sown for 1898.	Bushels produced, 1898.	Acres sown for 1899.	Acres planted, 1898.	Bushels (shelled) produced, 1898.	Acres planted, estimated, for Crop of 1899.
Freble .....	8,151	228,781	5,628	50	1,785	78	50,915	2,020,943	48,402
Putnam .....	5,808	208,648	6,120	1,838	32,158	1,677	58,102	2,067,899	58,842
Richland .....	23,688	797,694	22,296	200	5,098	264	80,752	1,197,431	28,890
Rose .....	862	15,571	336	.....	.....	.....	63,108	2,368,608	55,918
Sandusky .....	14,809	568,947	14,029	204	5,246	209	26,960	1,665,140	26,535
Scioto .....	2,823	38,631	2,176	17	320	18	25,760	826,133	22,685
Seneca .....	18,920	712,074	18,254	89	2,285	168	47,602	1,850,567	47,261
Shelby .....	22,517	632,122	18,485	189	4,308	94	52,981	1,714,186	41,898
Stark .....	20,216	975,546	26,191	70	1,429	46	29,046	1,378,993	27,454
Summit .....	18,608	716,302	16,666	88	1,008	60	26,821	809,622	17,702
Trumbull .....	21,023	709,482	19,221	.....	.....	120	16,366	598,526	15,079
Tuscarawas .....	18,985	468,146	17,957	22	362	10	24,273	808,526	21,066
Union .....	12,250	295,708	7,691	16	234	14	46,564	1,725,216	42,190
Van Wert .....	10,920	393,048	12,377	1,812	23,271	2,082	46,469	1,609,615	48,679
Vinton .....	1,149	16,559	716	.....	.....	2	12,370	843,121	11,150
Warren .....	5,833	135,028	2,717	227	9,880	222	46,817	1,850,266	42,046
Washington .....	7,142	146,224	6,000	1	23	8	26,052	799,270	21,798
Wayne .....	26,110	926,081	24,758	78	1,615	25	37,640	1,581,285	35,417
Williams .....	22,788	820,227	26,198	1,474	42,512	2,141	30,414	1,043,677	28,292
Wood .....	20,467	1,101,267	26,589	2,622	62,237	2,528	76,296	2,431,122	76,616
Wyandot .....	10,227	379,108	8,728	15	288	26	26,401	1,444,253	24,694
Totals .....	976,902	20,604,422	902,797	20,254	589,812	26,355	2,057,712	114,214,148	2,806,261



## MEADOW AND CLOVER.

Counties.	Meadow.		Clover.			
	Acres in Grass other than Clover, 1898.	Tons of Hay produced, 1898.	Acres grown, 1898.	Tons of Hay produced, 1898.	Bushels of Seed produced, 1898.	Acres plowed under for Manure, 1898.
Adams .....	14,985	12,160	6,296	2,731	798	672
Allen .....	22,766	26,105	7,861	8,888	1,045	461
Ashland .....	20,589	32,260	10,154	12,340	989	316
Ashtabula .....	44,062	56,768	2,308	2,824	41	129
Athens .....	19,924	22,122	706	890	21	84
Auglaize .....	14,998	16,979	7,708	8,468	1,840	1,308
Belmont .....	36,076	38,728	1,725	1,899	44	114
Brown .....	17,501	18,710	8,001	1,041	143	600
Butler .....	15,755	15,922	15,265	9,859	570	9,606
Carroll .....	28,736	29,216	2,348	2,575	993	4
Champaign .....	11,547	14,081	14,840	12,762	1,990	4,987
Clark .....	18,905	17,205	10,892	10,553	1,244	1,901
Clermont .....	20,862	17,214	2,522	2,326	39	1,204
Clinton .....	14,981	16,859	7,810	5,249	1,255	2,711
Columbiana .....	37,091	46,204	1,733	2,163	21	62
Cochocton .....	31,945	37,051	2,593	3,122	367	186
Crawford .....	25,577	24,516	6,496	11,323	1,958	215
Cuyahoga .....	27,503	36,317	1,126	1,549	15	122
Darke .....	15,981	19,123	24,233	21,540	4,788	9,288
Defiance .....	17,388	21,201	6,940	8,747	5,030	666
Delaware .....	33,019	36,484	4,331	4,947	220	1,084
Eric .....	10,736	14,449	4,112	4,837	506	345
Fairfield .....	28,492	29,368	3,097	7,879	1,211	767
Fayette .....	11,523	12,188	3,170	2,409	249	1,136
Franklin .....	26,863	31,100	6,009	5,124	419	1,650
Fulton .....	18,581	24,375	6,501	9,374	2,666	310
Gallia .....	15,586	12,848	1,738	1,127	122	455
Geauga .....	28,227	30,626	2,536	2,710	50	163
Greene .....	18,911	16,088	14,136	6,731	1,545	7,049
Guernsey .....	34,482	36,762	1,135	1,202	136	54
Hamilton .....	12,722	13,351	4,822	5,578	230	1,160
Hancock .....	27,060	33,407	14,705	19,006	8,584	1,002
Hardin .....	33,823	49,355	7,457	10,249	1,233	833
Harrison .....	27,421	30,509	2,124	2,682	2,627	17
Henry .....	11,996	15,874	8,990	9,331	4,321	1,343
Highland .....	23,768	21,280	3,620	3,071	545	406
Hocking .....	12,884	12,345	1,958	1,652	167	245
Holmes .....	20,885	27,125	3,634	4,179	1,112	302
Huron .....	32,882	40,775	8,532	10,859	1,910	573
Jackson .....	17,878	12,029	222	.....	.....	70
Jefferson .....	28,421	32,454	1,553	1,789	61	9
Knox .....	30,343	35,557	6,800	8,189	826	344
Lake .....	10,982	12,716	566	764	48	156
Lawrence .....	5,239	4,813	1,004	458	33	268
Licking .....	46,662	55,236	5,345	6,177	1,736	439
Logan .....	18,026	21,731	9,841	12,045	1,079	1,461
Lorain .....	41,453	49,466	2,863	3,856	197	69
Lucas .....	10,272	14,226	3,979	5,250	1,582	1,002
Madison .....	18,065	14,568	4,635	4,612	224	1,461
Mahoning .....	22,779	41,087	3,501	4,494	120	106
Marion .....	22,190	26,329	7,369	9,745	1,153	266
Medina .....	30,320	33,250	7,072	8,723	1,020	108
Meigs .....	17,402	16,659	1,635	1,067	87	384
Mercer .....	19,600	20,536	6,809	7,502	2,004	85
Miami .....	9,426	19,939	16,082	10,766	1,332	5,338
Monroe .....	25,685	26,592	557	634	82	63
Montgomery .....	18,838	16,307	15,845	12,192	1,547	7,208
Morgan .....	24,929	26,956	1,548	1,332	44	80
Morrow .....	30,704	41,133	4,878	6,083	561	136
Muskingum .....	42,172	44,901	2,480	2,712	114	117
Noble .....	24,627	26,720	959	1,081	44	40
Ottawa .....	12,514	16,337	4,069	5,601	840	132
Paulding .....	14,055	17,065	4,138	3,632	1,733	579
Perry .....	21,555	22,950	3,790	4,545	980	75
Pickaway .....	21,104	12,640	7,208	5,434	1,025	5,252
Pike .....	6,525	5,054	5,213	2,806	300	2,495
Portage .....	26,079	32,971	6,699	4,945	176	9,127
Preble .....	9,667	9,917	22,490	10,045	1,255	9,127
Putnam .....	15,159	18,168	9,824	18,955	1,199	2,361

## MEADOW AND CLOVER — Concluded.

Counties.	Meadow.		Clover.			
	Acres in Grass other than Clover, 1898.	Tons of Hay produced, 1898.	Acres grown, 1898.	Tons of Hay produced, 1898.	Bushels of Seed produced, 1898.	Acres plowed under for Manure, 1898.
Richland .....	26,865	36,066	10,394	13,068	903	660
Ross .....	21,066	12,162	9,303	4,793	1,240	4,876
Sandusky .....	16,496	22,540	17,313	10,877	2,134	956
Scioto .....	10,062	9,046	2,879	2,161	334	1,325
Seneca .....	23,822	29,520	21,796	21,565	3,006	1,267
Shelby .....	14,073	14,965	10,774	9,939	1,377	2,150
Stark .....	51,825	56,360	3,262	4,291	153	232
Summit .....	24,146	31,030	4,070	5,063	121	261
Trumbull .....	46,727	61,081	2,478	3,264	38	237
Tuscarawas .....	40,513	46,155	1,055	1,117	76	67
Union .....	24,304	28,344	4,514	5,075	343	317
Van Wert .....	23,196	28,592	6,843	8,881	1,165	360
Vinton .....	13,396	11,069	967	510	9	270
Warren .....	15,962	16,129	10,537	5,266	277	4,872
Washington .....	34,279	34,901	1,532	1,433	44	354
Wayne .....	33,430	47,541	11,566	15,416	1,311	844
Williams .....	26,919	30,958	9,863	10,550	6,322	505
Wood .....	24,705	33,967	7,319	8,382	2,066	717
Wyandot .....	22,107	26,922	9,321	13,696	1,906	600
Totals .....	2,001,111	2,323,978	560,940	552,021	90,841	117,136

## TOBACCO, FLAX AND POTATOES.

Counties.	Tobacco.		Flax.			Potatoes.		
	Acres planted, 1898.	Pounds produced, 1898.	Acres sown, 1898.	Bushels of Seed, 1898.	Pounds of Fibre, 1898.	Acres planted, 1898.	Bushels produced, 1898.	Acres estimated for crop of 1899.
Adams	2,638	1,828,170				842	15,833	245
Allen	1	40				752	44,450	672
Ashtabula	%	1,400	1,462	15,285	765,990	1,072	88,345	937
Ashland			1	1		4,477	400,785	2,852
Athens	14	10,300				574	32,445	490
Auglaize	19	80,880	8	10		1,081	45,952	908
Belmont	1,210	1,289,763				979	57,129	856
Brown	8,487	8,800,029				689	25,652	629
Butler	1,221	1,085,965				1,226	75,759	932
Carroll						685	58,008	544
Champaign	110	98,080				616	41,915	559
Clark	247	261,060				787	54,574	960
Clermont	2,098	1,597,860				1,455	56,084	988
Clinton	129	102,646				648	40,227	584
Columbiana						1,756	186,578	1,637
Coshocton	4	10				1,170	71,841	949
Crawford			62	862	18	1,467	123,968	1,458
Cuyahoga						6,898	748,559	6,286
Darke	11,812	10,270,856	17	85		1,660	100,468	1,501
Deane	8	5,650	7	56		918	78,774	1,141
Delaware	%	100				800	38,851	544
Erie						8,082	812,780	2,776
Fairfield						1,084	71,746	1,124
Fayette	8	45			14	107	6,011	140
Franklin	%	20				1,665	82,204	1,485
Fulton						1,291	140,271	1,192
Gallia	1,026	890,582				248	13,015	210
Geauga			10	90		8,087	814,719	2,890
Greene	698	492,439				841	65,068	711
Guernsey	260	240,461	5	4		475	23,423	467
Hamilton	106	108,422				4,015	202,989	3,122
Hancock						1,167	80,969	1,208
Hardin			%	5		1,864	96,941	1,153
Harrison						424	27,647	296
Henry	%	120	1	10		1,178	87,715	1,116
Highland	81	28,270				428	21,962	310
Hocking	1	400				667	26,481	614
Holmes						964	88,123	919
Huron			222	2,962	121,400	1,667	170,498	1,535
Jackson						245	11,083	164
Jefferson						802	46,224	658
Knox		10			80	692	55,770	674
Lake			27	2,300	320	1,905	208,969	1,542
Lawrence	80	40,297				292	17,674	208
Licking						1,288	81,105	1,207
Logan	82	66,000				488	27,856	516
Lorain			97	913	16,500	2,559	284,986	2,122
Lucas	1	800	27	225	10	8,719	343,518	3,130
Madison	%	20				301	15,356	244
Mahoning						1,697	197,760	6,316
Marion						920	57,598	777
Medina	176	238,440	549	5,922	68,019	2,145	245,032	2,039
Meigs	18	1,900				960	54,839	1,277
Mercer	28	18,200				814	32,896	808
Miami	3,008	8,066,706	9	80	6	912	66,449	812
Monroe	1,467	1,388,350	1	6		1,268	85,368	1,220
Montgomery	15,173	12,918,397	24	125		1,538	98,107	1,449
Morgan	118	101,850				441	29,746	404
Morrow						934	59,178	819
Muskingum	13	13,340				883	50,667	602
Noble	1,090	1,150,675				635	40,685	558
Ottawa						721	36,360	639
Paulding	8	4,000	10	100		450	31,663	412
Perry	13	7,400				724	41,815	596
Pickaway						464	21,104	363
Pike	25	17,443				512	30,984	494
Portage	4	8,100	39	327	11,067	5,899	775,471	6,144

## TOBACCO, FLAX AND POTATOES—Concluded.

Counties.	Tobacco.		Flax.			Potatoes.		
	Acres planted, 1898.	Pounds produced, 1898.	Acres sown, 1898.	Bushels of Seed, 1898.	Pounds of Fibre, 1898.	Acres planted, 1898.	Bushels produced, 1898.	Acres estimated for crop of 1899.
Preble .....	6,637	4,905,850	67	225	.....	787	53,154	785
Futnam .....	5	597	3	11	50	1,036	80,482	1,060
Richland .....	.....	.....	114	3,012	43,000	1,761	225,433	1,723
Ross .....	.....	.....	.....	.....	.....	759	38,889	594
Sandusky .....	.....	.....	.....	.....	.....	1,898	200,687	1,929
Scioto .....	381	233,390	.....	.....	.....	1,105	67,273	952
Seneca .....	.....	500	46	220	.....	1,674	155,098	1,463
Shelby .....	413	165,021	53	120	6,000	799	41,111	1,079
Stark .....	4	570	$\frac{1}{4}$	2	.....	3,069	415,061	3,371
Summit .....	.....	.....	.....	.....	.....	2,731	349,608	2,489
Trumbull .....	.....	75	25	319	.....	3,221	351,131	2,905
Tuscarawas .....	.....	.....	.....	.....	.....	2,065	160,579	2,043
Union .....	.....	.....	.....	.....	.....	278	12,344	248
Van Wert .....	.....	.....	4	60	.....	770	43,550	633
Vinton .....	1	1,850	.....	.....	.....	454	23,728	870
Warren .....	4,095	3,217,078	.....	.....	.....	591	42,321	523
Washington .....	67	54,100	.....	.....	.....	1,812	109,693	1,509
Wayne .....	238	306,021	285	2,412	135,370	2,482	234,325	2,211
Williams .....	.....	.....	.....	.....	.....	1,088	86,237	1,055
Wood .....	2	150	5	60	.....	1,362	104,640	1,203
Wyandot .....	.....	.....	35	.....	.....	816	67,397	841
Totals .....	57,659	49,534,158	3,330	36,307	1,163,184	118,165	10,097,418	111,744

## ORCHARDS.

Counties.	Acres occupied, 1888.	Apples, Bushels produced, 1888.	Peaches, Bushels produced, 1888.	Pears, Bushels produced, 1888.	Cherries, Bushels produced, 1888.	Plums, Bushels produced, 1888.
Adams	3,702	9,565	6,250	1,558	462	638
Allen	2,788	2,051	1,900	2,868	767	1,284
Ashland	3,962	25,170	9,944	1,526	944	1,642
Ashtabula	3,953	30,846	7,051	2,275	315	231
Athens	9,222	7,970	179,706	410	515	775
Auglaize	3,343	1,344	728	3,072	174	391
Belmont	6,421	48,059	52,215	6,541	4,174	8,580
Brown	3,404	11,502	3,047	876	412	333
Butler	1,558	789	14,500	2,566	917	763
Carroll	4,424	53,789	19,478	1,231	1,374	393
Champaign	2,368	5,134	3,739	4,413	1,600	736
Clark	1,708	2,346	3,582	2,774	2,068	916
Clermont	7,741	4,658	55,496	5,856	1,045	223
Clinton	2,365	2,225	8,168	1,950	862	1,131
Columbiana	7,224	100,788	38,825	3,976	5,415	4,416
Coshocton	6,049	75,798	118,450	2,057	1,236	260
Crawford	3,888	38,024	12,977	2,985	719	1,486
Cuyahoga	4,822	37,474	37,977	11,486	1,001	1,477
Darke	4,273	3,841	4,346	5,080	2,298	751
DeFrance	2,882	3,076	2,495	2,976	402	694
Delaware	2,995	29,877	3,530	1,780	627	1,091
Erie	3,226	22,668	51,304	3,152	148	715
Fairfield	4,444	11,517	7,697	2,823	2,120	621
Fayette	1,449	1,671	2,329	1,070	979	96
Franklin	3,807	19,673	5,262	2,658	906	1,279
Fulton	3,612	5,298	4,898	2,293	530	812
Gallia	6,900	6,556	3,245	434	161	531
Geauga	3,040	46,396	8,161	4,086	236	222
Greene	2,106	469	10,240	2,384	862	126
Guernsey	6,067	45,818	61,256	1,856	657	747
Hamilton	3,084	1,747	40,105	19,279	5,827	540
Hancock	4,918	5,194	3,521	2,312	904	1,455
Hardin	2,972	3,756	918	1,139	151	274
Harrison	4,121	29,088	29,791	1,974	2,084	567
Henry	3,867	2,266	3,190	3,390	576	951
Highland	4,119	10,199	9,561	1,082	408	201
Hocking	3,649	8,488	26,678	713	1,769	496
Holmes	4,330	42,128	19,613	2,578	2,256	871
Huron	4,621	16,961	2,225	1,588	571	609
Jackson	3,039	11,186	6,206	266	792	258
Jefferson	4,164	54,149	16,555	2,368	1,218	1,731
Knox	4,153	23,908	25,255	2,106	587	340
Lake	2,641	29,148	24,381	4,402	480	560
Lawrence	3,792	4,408	437	351	174	66
Licking	6,006	44,508	58,355	3,780	1,698	815
Logan	2,263	3,802	2,302	2,666	1,084	2,524
Lorain	4,769	14,225	5,746	3,405	267	483
Lucas	3,555	9,224	31,968	7,867	1,649	1,397
Madison	1,155	5,984	2,361	736	465	358
Mahoning	4,299	112,825	15,265	3,911	1,883	5,528
Marion	2,145	20,411	2,375	1,279	252	1,230
Medina	3,793	24,889	889	1,392	843	1,469
Meigs	6,639	6,492	7,395	493	622	176
Mercer	2,515	990	1,720	1,419	269	668
Miami	1,744	543	3,464	2,276	1,984	312
Monroe	5,466	18,350	12,241	1,138	2,552	538
Montgomery	4,062	1,848	19,502	13,856	5,091	516
Morgan	5,027	7,167	29,359	1,719	1,601	277
Morrow	4,075	19,559	4,377	2,946	815	2,009
Muskingum	7,151	44,635	127,696	4,392	2,860	440
Noble	4,298	9,581	35,067	958	474	511
Ottawa	7,967	6,454	444,090	7,727	418	4,409
Paulding	1,980	2,350	571	863	83	377
Perry	3,982	11,250	14,080	2,022	2,250	132
Pickaway	1,404	2,072	1,495	547	276	80
Pike	3,208	21,691	14,936	360	484	196
Portage	4,558	63,275	25,925	2,029	849	1,065
Preble	2,729	3,731	11,309	7,615	1,877	998
Putnam	3,323	3,734	2,358	2,362	818	1,326
Richland	5,637	21,573	12,498	3,617	2,055	1,751

## ORCHARDS—Concluded.

Counties.	Acres occupied, 1898.	Apples, Bushels produced, 1898.	Peaches, Bushels produced, 1898.	Pears, Bushels produced, 1898.	Cherries, Bushels produced, 1898.	Plums, Bushels produced, 1898.
Roos .....	4,822	11,808	72,415	1,405	661	843
Sandusky .....	2,967	20,624	50,223	5,324	1,849	861
Scioto .....	2,850	19,595	4,808	224	151	166
Seneca .....	4,329	12,554	9,074	2,602	690	2,441
Shelby .....	1,868	897	1,783	2,625	626	1,114
Stark .....	6,959	153,769	40,049	5,949	3,951	3,184
Summit .....	3,986	55,527	12,958	4,351	2,725	1,804
Trumbull .....	5,008	99,220	12,718	2,637	723	1,026
Tuscarawas .....	6,867	95,883	46,130	2,153	2,079	1,499
Union .....	2,290	15,388	2,843	1,321	598	1,104
Van Wert .....	3,113	1,696	970	1,170	823	929
Vinton .....	3,513	7,305	17,198	250	741	183
Warren .....	3,170	1,406	32,780	7,568	792	390
Washington .....	10,787	9,044	13,455	7,459	624	124
Wayne .....	5,474	51,084	10,709	3,514	3,123	1,313
Williams .....	4,674	33,940	1,958	6,324	1,057	1,159
Wood .....	5,024	6,355	12,264	5,359	2,322	2,749
Wyandot .....	2,852	12,497	4,216	2,265	721	1,944
Totals .....	351,807	1,987,243	2,150,289	295,129	109,550	90,452

## GRAPES, WINE AND SWEET POTATOES.

Counties.	Grapes and Wine.				Sweet Potatoes.	
	Acres (new) Vineyard planted, 1898.	Whole Number of Acres Vineyard, 1898.	Pounds of Grapes gathered in 1898.	Gallons Wine pressed in 1898.	Acres planted, 1898.	Bushels produced, 1898.
Adams	13	14	3,590	135	17	1,579
Allen		24	74,555	7,292	11	205
Ashland	1	2	33,310	629	%	201
Ashtabula	7	882	2,003,925		1	20
Athens					6	465
Auglaize	2	16	9,350	1,053	2	24
Belmont	10	98	137,050	5,300	2	50
Brown	2	2		275	9	900
Butler	3	16	23,450	1,000	8	1,305
Carroll			18,903	289	7	193
Champaign	4	12	27,430	981	10	743
Clark	3	33	112,500	2,715	11	2,041
Clermont	33	106	179,625	3,107	65	3,861
Clinton			625	109	18	486
Columbiana				4		
Coshocton	1	5	10,300	691		36
Crawford		29	71,784	3,771	1	52
Cuyahoga	33	3,625	15,610,700	66,906		
Darke	6	20	89,623	1,126	108	3,087
Defiance	2	42	164,050	5,371	5	408
Delaware		1%	3,760	3	%	40
Eric	50	1,354	4,235,500	135,142	1	335
Fairfield	2	66	133,150	430	43	2,146
Fayette		2	8,750		5	103
Franklin	2	3	15,200	238	1	77
Fulton	10	7	52,160	5,610	2	230
Gallia			5		23	862
Geauga	2	237	882,906	1,300	2	79
Greene	2	3	17,300		1	266
Guernsey	2	3	12,320	3	4	86
Hamilton	35	116	125,000	18,430	99	9,479
Hancock	2	17	108,000	2,024	7	487
Hardin	1	10	26,540	524		3
Harrison	2	10	9,530	30		44
Henry	5	20	67,530	2,769	4	297
Highland	1		6,300	66	14	746
Hocking		12	9,650	260	13	1,075
Holmes	%	11	20,845	839		206
Huron	1	11	9,300	275		
Jackson		2	1,400		1	75
Jefferson	3	3	4,400		4	121
Knox		5	3,070	37	3	7
Lake	33	3,080	11,019,123	5,850		
Lawrence	4		6,920		179	24,292
Licking		10	39,238	214	3	247
Logan	2	8	24,325	87	17	647
Lorain	9	1,047	4,061,313	28,119	4	468
Lucas	12	412	984,530	21,190	27	43
Madison		2	3,965	20	1	36
Mahoning	5	7	3,960	283	5	26
Marion			17,645	1,570	2	113
Medina		15	48,680	740		7
Meigs	1		3,110	55	17	1,548
Mercer		21	25,300	2,116		
Miami		9	71,500	35	6	907
Monroe		25	9,200	1,481	5	217
Montgomery	7	56	173,520	5,119	26	2,640
Morgan					8	1,030
Morrow			6,680	20		25
Muskingum	10	3	19,865	465	37	2,875
Noble	2	13	13,900	1,842	9	725
Ottawa	3	2,600	7,068,005	182,792		
Paulding	2	4	14,375	183	61	75
Perry		4	1,800	35	46	2,200
Pickaway					39	
Pike		7	6,300	106	3	317
Portage		6	7,600	29		
Preble	4	8	23,395	1,337	48	3,613

## GRAPES, WINE AND SWEET POTATOES — Concluded.

Counties.	Grapes and Wine.				Sweet Potatoes.	
	Acres (new) Vineyard planted, 1898.	Whole Number of Acres Vineyard, 1898.	Pounds of Grapes gathered in 1898.	Gallons Wine pressed in 1898.	Acres planted, 1898.	Bushels produced, 1898.
Putnam .....	15	23	159,673	5,822	5	171
Richland .....		9	25,563	405	24	279
Ross .....	1	34	31,845	658	9	236
Sandusky .....	1	12	123,960	5,899	1	306
Scioto .....		7	8,690	1,290	23	2,178
Seneca .....	6	16	49,935	3,636	1	179
Shelby .....	2	5	20,606	1,831	4	220
Stark .....	4	5	54,666	2,468	1	947
Summit .....	12	17	25,120	20	1	95
Trumbull .....	33	2	5,650	72	$\frac{1}{2}$	45
Tuscarawas .....	8	29	61,496	4,863	2	112
Union .....		159	27,965	2,157		
Van Wert .....	1	4	16,205	723	2	89
Vinton .....		1	350	10	5	332
Warren .....	3	2	12,175	875	16	2,013
Washington .....		3	1,700	180	133	22,475
Wayne .....	7	24	75,730	2,675	1	456
Williams .....		26	115,955	2,027	7	568
Wood .....	29	100	171,662	4,072	18	506
Wyandot .....	1	3	12,430	435		58
Totals .....	456	14,392	48,899,977	563,192	1,300	105,905



## BROOM CORN AND COMMERCIAL FERTILIZERS.

Counties.	Broom Corn.		Commercial Fertilizers.			
	Acres planted, 1888.	Pounds Broom Brush produced, 1888.	Pounds used during 1888.	Cost of, for 1888.	Pounds bought for 1889.	Cost for 1889.
Adams .....			3,028,800	\$35,500 00	950,900	\$10,554 00
Allen .....	1	30	150,190	1,743 00	150,300	1,685 00
Ashland .....	1	800	2,657,880	25,252 00	428,200	3,507 00
Ashtabula .....			4,390,760	47,479 00	1,291,600	14,462 00
Athens .....			1,844,100	17,166 00	1,257,150	11,318 00
Auglaize .....	111	100,700	88,100	893 00	38,260	490 00
Belmont .....	11	2,000	1,726,742	18,371 00	345,268	4,300 00
Brown .....	17	2,714	3,640,480	17,046 00	362,654	4,107 00
Butler .....	19	7,500	493,840	5,082 00	207,907	2,349 00
Carroll .....			1,899,281	24,119 00	346,335	2,990 00
Champaign .....	62	47,500	1,410,980	15,015 00	813,960	7,135 00
Clark .....			1,084,668	11,915 00	177,590	2,304 00
Clermont .....			1,082,190	11,231 00	351,962	4,184 00
Clinton .....	187		810,463	10,145 00	477,055	6,787 00
Columbiana .....			3,399,088	35,633 00	580,322	5,483 00
Coshocton .....			1,461,990	12,619 00	321,700	3,203 00
Crawford .....			1,827,400	14,472 00	61,900	1,104 00
Cuyahoga .....			3,610,600	40,613 00	1,168,480	13,228 00
Darke .....	81	41,300	914,138	8,288 00	754,501	6,489 00
Defiance .....			75,300	762 00	8,000	83 00
Delaware .....	5	3,000	788,100	5,064 00	497,250	4,949 00
Erie .....	15		908,870	8,465 00	319,200	2,963 00
Fairfield .....			2,755,650	28,789 00	1,044,000	11,991 00
Franklin .....	76	39,820	296,850	3,290 00	199,850	2,265 00
Fulton .....	1	500	151,250	1,914 00	41,000	578 00
Fulton .....	1	500	151,250	1,914 00	41,000	578 00
Gallia .....	11	4,600	2,341,521	21,428 00	1,334,179	15,263 00
Geauga .....			2,391,347	29,088 00	862,950	10,078 00
Greene .....			529,400	5,290 00	341,000	1,099 00
Guernsey .....	4	175	2,184,725	21,087 00	515,308	5,608 00
Hamilton .....	18	82				1,285 00
Hancock .....			494,000	5,455 00	69,900	770 00
Hardin .....	10		146,900	2,130 00	145,000	2,099 00
Harrison .....			810,421	9,667 00	311,100	3,586 00
Henry .....	3	1,000	70,100	749 00	47,625	690 00
Highland .....	2	200	3,848,215	39,550 00	1,001,800	11,584 00
Hocking .....	2	1,000	2,266,851	24,121 00	387,868	3,417 00
Holmes .....	30	600	2,130,800	18,985 00	206,700	2,103 00
Huron .....			2,583,560	29,953 00	1,042,587	9,946 00
Jackson .....			1,857,810	20,466 00	1,377,670	16,067 00
Jefferson .....			1,422,910	13,986 00	209,260	1,970 00
Knox .....			2,402,450	17,920 00	386,200	3,647 00
Lake .....			1,117,600	11,112 00	494,730	4,264 00
Lawrence .....			416,800	4,416 00	435,510	4,486 00
Licking .....	5	2,500	2,297,390	22,351 00	1,206,820	11,708 00
Logan .....			382,200	3,928 00	185,250	2,177 00
Lorain .....	16		3,074,430	30,708 00	606,400	7,224 00
Lucas .....	20		147,500	1,755 00	34,500	408 00
Madison .....			60,500	777 00	149,800	874 00
Mahoning .....	5	60	3,673,980	51,784 00	1,175,410	10,045 00
Marion .....			257,900	2,258 00	62,500	674 00
Medina .....	6		5,267,500	52,019 00	572,100	6,343 00
Meigs .....			2,981,254	29,316 00	959,264	10,726 00
Mercer .....	1	80	102,100	1,264 00	126,007	1,725 00
Miami .....	16	6,000	1,310,426	13,786 00	253,630	2,715 00
Monroe .....	1	345	2,321,430	21,899 00	704,400	6,876 00
Montgomery .....	31	21,500	2,391,778	24,194 00	1,323,157	11,239 00
Morgan .....	6	1,450	2,304,923	24,841 00	531,050	5,959 00
Morrow .....			2,323,886	19,074 00	274,550	1,882 00
Muskingum .....			2,832,165	27,232 00	544,550	4,931 00
Noble .....	1	900	1,067,016	11,044 00	491,000	4,789 00
Ottawa .....			1,400	21 00	500	12 00
Paulding .....	1	400	14,243	181 00	10,400	119 00
Perry .....			3,650,810	35,895 00	1,257,215	12,123 00
Pickaway .....			567,913	9,170 00	732,400	8,674 00
Pike .....	3	1,000	2,680,680	27,571 00	1,476,806	14,727 00
Portage .....			3,451,854	38,112 00	1,065,690	11,989 00
Preble .....	5	2,000	4,131,015	41,982 00	1,735,220	17,688 00

## BROOM CORN AND COMMERCIAL FERTILIZERS—Concluded.

Counties.	Broom Corn.		Commercial Fertilizers.			
	Acres planted, 1898.	Pounds Broom Brush produced, 1898.	Pounds used during 1898.	Cost of, for 1898.	Pounds bought for 1899.	Cost for 1899.
Putnam .....	40	36,000	6,000	\$57 00	.....	.....
Richland .....		100	3,341,551	24,666 00	386,900	3,866 00
Ross .....	1	500	2,156,380	23,825 00	1,541,719	16,946 00
Sandusky .....			424,100	4,772 00	109,850	1,354 00
Scioto .....	1	200	1,984,506	20,432 00	1,859,020	20,226 00
Seneca .....			2,380,600	22,379 00	1,592,800	14,880 00
Shelby .....	5	4,000	582,510	5,944 00	470,730	4,690 00
Stark .....		50	2,535,770	39,341 00	1,013,020	10,330 00
Summit .....			2,781,627	32,728 00	458,224	5,308 00
Trumbull .....			3,320,628	41,706 00	1,133,822	13,842 00
Tuscarawas .....	2	2,000	1,573,450	15,818 00	868,472	7,274 00
Union .....	2	2,000	168,350	1,920 00	83,950	838 00
Van Wert .....			1,000	12 00	200	18 00
Vinton .....			1,964,350	17,832 00	696,700	8,062 00
Warren .....			870,900	9,466 00	619,970	7,047 00
Washington .....	1	600	4,617,730	45,682 00	1,124,040	11,392 00
Wayne .....			4,508,080	47,567 00	1,363,280	12,517 00
Williams .....			175,550	2,067 00	110,700	1,244 00
Wood .....			513,300	5,822 00	334,500	3,166 00
Wyandot .....	$\frac{1}{2}$	900	574,750	4,606 00	210,320	2,312 00
Totals .....	748	344,100	158,190,375	\$1,543,915 00	51,919,063	\$635,557 00

## EGGS, MILK, BUTTER AND CHEESE.

Counties.	Eggs.		Milk.	Butter.		Cheese.	
	Number Dozens produced, 1898.	Number Dozens shipped beyond State, 1898.	Gallons sold for Family Use, 1898.	Pounds made in Home Dairies, 1898.	Pounds made in Factories and Creameries, 1898.	Pounds made in Home Dairies, 1898.	Pounds made in Factories and Creameries, 1898.
Adams	771,125	9	5,872	462,925			
Allen	789,640		190,408	538,326	4,975	4,580	
Ashland	807,218		63,842	507,842	57,075	41,230	201,000
Ashtabula	858,864	21,700	2,224,735	838,352	192,217	37,100	2,516,938
Athens	510,430		46,825	116,210		100	
Auglaize	733,672	58,000	105,127	544,437	104,060	2,048	700
Belmont	765,347	752	431,940	770,678	45,080	12,265	
Brown	1,106,859		39,579	683,433		30	
Butler	648,956	600	522,850	650,669	3,500	26,465	
Carroll	448,942	300	36,649	660,135	45,615		21,161
Champaign	499,082	45	328,080	451,404	24,950	5,000	
Clark	507,109		401,924	508,921	82,680		
Clermont	756,709		191,975	679,435	4,200		
Clinton	519,447	2,200	119,605	302,336	46,560	752	
Columbiana	763,690	27,560	1,577,012	981,070	564,639	104,417	339,280
Coshocton	600,062	12,807	17,305	620,887	1,500	250	79,600
Crawford	819,135	9,700	105,075	602,967	21,900	150	
Cuyahoga	542,069	40	4,991,863	566,648	11,210	9,475	78,500
Darke	1,370,828		257,500	1,119,643		7,450	
Defiance	782,815		89,573	396,455	37,700		
Delaware	752,173	20,080	62,010	717,507	251,781	200	
Erie	344,608	350	218,027	233,757	89,794	400	400
Fairfield	849,288	102,425	49,810	764,410	26,450		
Fayette	395,094		61,995	214,990	12,000		
Franklin	815,668	10	1,849,068	885,936			
Fulton	738,477	2,150	268,533	470,658	17,041	147	631,420
Gallia	699,402	200	97,894	490,744		100	
Geauga	512,396		9,944,044	340,900	519,473		2,702,573
Greene	699,581		68,465	593,983		1,600	
Guernsey	539,178	765	43,160	546,004	74,563	1,250	
Hamilton	355,006		2,206,722	609,086		12,980	
Hancock	830,151	300	190,345	859,408	2,725	2,006	
Hardin	708,742	120	69,696	465,151	16,160		800
Harrison	414,029	75	223,587	452,874	190,106		
Henry	1,006,469		184,790	596,523	45,200	25	
Highland	781,623	1,500,000	39,200	476,667	30,000	2,400	
Hocking	366,780		9,600	344,590			
Holmes	726,697		36,400	477,458	1,500	14,650	198,700
Huron	682,364		168,170	663,172	44,170	6,000	76,560
Jackson	432,331		13,725	250,274			
Jefferson	430,181	700	347,292	542,328	118,990	10,000	82,060
Knox	750,171		61,155	730,605	12,550		3,000
Lake	267,595		1,241,070	257,997			
Lawrence	225,121	6,025	21,115	261,567			
Licking	1,021,028	12,400	259,483	982,771		7,200	
Logan	699,516	6,130	89,736	484,566	164,750	17,125	
Lorain	622,618	125	1,145,067	671,608	192,705	26,473	995,898
Lucas	513,045		1,223,706	364,654	7,012	1,500	
Madison	498,005		231,861	292,562	7,000	500	
Mahoning	558,091	34,455	610,207	777,428	357,489	148,940	382,000
Marion	768,573		72,960	470,074			
Medina	702,851	1,740	235,569	854,476	249,466	28,775	363,170
Meigs	592,867	14,280	21,521	453,626	2,500	6,080	
Mercer	860,222	100,040	222,040	394,449	184,800		
Miami	491,037		203,284	545,458		14,100	
Monroe	843,270	25,465	16,823	548,614	7,800	146,900	341,983
Montgomery	842,333		1,381,118	950,088	6,050	895	
Morgan	804,860		14,496	534,800	43,407	150	
Morrow	740,441		20,465	624,764			
Muskingum	750,094	1,060	298,253	732,867	42,010		
Noble	726,838	17,400	1,022	497,139	3,789	720	
Ottawa	587,238		7,095	331,118	78,830		
Paulding	597,763		11,020	612,000		100	
Perry	497,375		16,150	461,960			
Pickaway	464,495		58,188	284,286	5,075		
Pike	399,840		8,611	161,138			
Portage	608,381	265	285,083	667,159	217,141	8,790	1,622,763
Preble	777,031	40	47,655	647,958	94,454	925	

## EGGS, MILK, BUTTER AND CHEESE—Concluded.

Counties.	Eggs.		Milk.	Butter.		Cheese.	
	Number Dozens produced, 1888.	Number Dozens shipped beyond State, 1888.	Gallons sold for Family Use, 1888.	Pounds made in Home Dairies, 1888.	Pounds made in Factories and Creameries, 1888.	Pounds made in Home Dairies, 1888.	Pounds made in Factories and Creameries, 1888.
Putnam .....	1,011,496	116,894	62,437	582,682	6,500	23,345	.....
Richland .....	768,229	25	320,311	693,707	6,000	19,165	.....
Ross .....	412,040	75	117,897	340,254	3,000	10,400	.....
Sandusky .....	645,387	.....	70,356	684,626	979	545	.....
Scioto .....	298,252	.....	190,147	300,916	2,730	.....	.....
Seneca .....	659,622	.....	122,644	682,681	906	500	22,000
Shelby .....	1,327,759	6,800	210,125	462,590	121,850	.....	.....
Stark .....	332,418	4,800	638,067	856,400	100,730	118,625	339,981
Summit .....	458,515	.....	1,321,055	621,130	846,040	100	623,085
Trumbull .....	744,425	570	607,703	1,553,248	120,663	18,557	2,986,845
Tuscarawas .....	636,567	50	339,735	558,279	58,042	402,093	500,097
Union .....	720,803	.....	396,565	568,129	.....	150	.....
Van Wert .....	876,200	.....	10,467	612,180	25,780	.....	.....
Vinton .....	321,025	.....	2,685	253,130	1,100	200	.....
Warren .....	904,766	280	223,069	583,911	34,875	40	.....
Washington .....	1,143,410	10,300	140,426	731,404	41,755	2,435	.....
Wayne .....	990,532	.....	306,363	947,525	34,515	44,186	489,240
Williams .....	787,578	.....	62,976	581,588	70,965	200	25,000
Wood .....	884,625	40,000	400,554	623,554	51,970	100	.....
Wyandot .....	629,564	6	49,710	948,731	21,500	100	32,000
Totals .....	59,411,267	2,154,708	41,093,607	50,464,908	5,375,065	1,847,175	15,709,889

## SORGHUM, MAPLE AND BEES.

Counties.	Sorghum.			Maple in 1899.			Bees.	
	Acres planted, 1898.	Pounds of Sugar, 1898.	Gallons of Syrup, 1898.	Number of Trees from which Sugar or Syrup was made.	Pounds of Sugar.	Gallons of Syrup.	Number of Hives, 1898.	Pounds of Honey, 1898.
Adams	148	41	9,380	4,321	10	1,187	1,549	24,243
Allen	45	151	1,540	22,546	840	6,769	1,267	2,139
Ashland	13	8	583	108,680	74,084	34,516	800	1,977
Ashtabula	20	46	96	277,686	161,827	81,071	1,584	39,323
Athens	32	.....	2,187	1,842	385	527	663	11,206
Auglaize	210	.....	10,221	14,841	825	5,606	1,192	11,684
Belmont	90	47	5,269	8,371	81	1,473	1,086	2,355
Brown	25	50	1,468	.....	.....	215	470	4,325
Butler	8	15	308	1,735	.....	480	443	3,940
Carroll	41	.....	2,946	1,080	223	473	544	6,575
Champaign	23	30	1,532	22,446	4,453	10,967	1,093	10,767
Clark	26	12	2,391	495	80	380	516	7,945
Clermont	54	20	3,106	1,379	.....	777	849	10,137
Clinton	20	23	1,624	32,990	1,420	12,253	1,378	5,456
Columbiana	22	286	26	58,381	3,215	23,063	456	792
Coshocton	32	842	2,494	2,960	94	1,884	593	11,300
Crawford	44	.....	1,384	42,985	2,909	16,541	715	2,242
Cuyahoga	1	.....	25	83,230	20,205	30,591	307	1,800
Darke	137	.....	10,415	14,777	.....	4,161	1,589	27,402
Defiance	100	.....	8,323	12,182	922	5,502	946	21,514
Delaware	18	.....	1,088	41,812	640	15,145	445	1,280
Eric	2	.....	226	10,025	1,340	4,723	191	820
Fairfield	45	21	2,839	10,482	125	4,073	582	3,170
Fayette	4	145	80	823	29	386	282	3,118
Franklin	18	135	160	1,849	830	1,094	380	1,144
Fulton	33	10	2,514	7,889	539	2,795	385	5,641
Gallia	286	50	26,251	875	290	178	959	11,859
Geauga	1	.....	60	587,275	216,319	234,438	1,800	22,608
Greene	13	26	1,519	27,294	1,959	9,738	475	3,905
Guernsey	104	.....	8,294	631	44	149	380	2,679
Hamilton	2	.....	80	.....	.....	315	337	3,980
Hancock	14	10	998	46,157	965	16,683	1,898	17,606
Hardin	7	14	690	7,826	890	3,505	1,090	8,187
Harrison	16	.....	1,314	2,831	50	1,345	577	5,169
Henry	57	.....	4,112	5,052	475	2,882	385	10,471
Highland	22	369	1,197	8,541	644	3,801	414	5,447
Hocking	52	.....	4,158	836	.....	180	718	7,425
Holmes	18	.....	1,380	8,808	1,380	3,908	386	6,305
Huron	47	.....	2,683	82,509	12,788	25,649	697	1,094
Jackson	55	.....	3,888	67	100	13	492	6,302
Jefferson	19	20	1,141	6,392	587	2,242	309	1,805
Knox	4	12	184	58,410	20,456	16,777	1,065	7,817
Lake	.....	.....	.....	49,324	27,535	9,889	239	685
Lawrence	580	.....	57,360	232	20	55	992	19,642
Licking	12	.....	3,042	60,927	4,291	25,908	1,084	9,958
Logan	14	.....	871	110,090	122,752	50,595	1,108	8,658
Lorain	457	143	1,754	108,084	59,310	31,615	350	1,229
Lucas	32	.....	1,289	397	1	127	698	9,798
Madison	10	78	499	608	445	150	485	4,479
Mahoning	1	.....	109	133,712	16,323	50,753	2,804	993
Marion	14	.....	779	5,163	75	2,052	543	3,088
Medina	34	.....	82	341,961	88,406	136,961	848	9,092
Meigs	107	2,085	5,587	616	135	198	1,331	21,324
Mercer	148	.....	7,993	150	.....	46	1,094	11,231
Miami	4	85	673	8,623	320	3,627	330	5,399
Monroe	339	.....	25,935	992	940	229	591	3,408
Montgomery	58	197	6,063	15,405	25	5,714	743	11,249
Morgan	35	.....	2,598	321	80	206	645	4,156
Morrow	5	.....	426	97,074	20,598	43,907	722	3,468
Muskingum	21	96	1,495	1,508	18	670	1,379	18,022
Noble	229	5	16,888	247	120	184	757	2,190
Ottawa	2	143	.....	330	.....	40	196	3,043
Paulding	42	.....	2,923	853	140	624	2,910	16,885
Perry	31	.....	2,260	17,545	780	8,040	910	6,585
Pickaway	25	40	.....	2,412	217	1,122	296	1,810
Pike	138	140	11,227	393	81	822	1,186	10,120
Portage	1	.....	112	389,684	22,875	171,858	605	3,680
Preble	66	10	4,145	16,004	280	5,190	308	19,179

## SORGHUM, MAPLE AND BEES—Concluded.

Counties.	Sorghum.			Maple in 1899.			Bees.	
	Acres planted, 1898.	Pounds of Sugar, 1898.	Gallons of Syrup, 1898.	Number of Trees from which Sugar or Syrup was made.	Pounds of Sugar.	Gallons of Syrup.	Number of Hives, 1898.	Pounds of Honey, 1898.
Putnam .....	128	652	5,221	5,888	172	2,490	1,935	12,761
Richland .....	11	179	5,196	99,527	21,678	41,746	970	3,328
Ross .....	58	177	2,789	5,806	175	2,868	985	11,917
Sandusky .....	12	.....	1,119	4,297	100	1,987	542	3,755
Scioto .....	147	.....	14,689	127	.....	202	848	9,000
Seneca .....	24	.....	1,885	34,864	1,997	12,811	713	3,725
Shelby .....	112	.....	7,970	4,214	62	1,758	1,207	10,576
Stark .....	8	499	459	48,991	968	19,024	656	1,399
Summit .....	.....	.....	4,194	177,209	21,269	20,963	917	1,498
Trumbull .....	8	.....	91	294,523	52,268	96,962	1,229	13,816
Tuscarawas .....	29	28	1,672	2,984	208	1,517	755	8,486
Union .....	11	40	827	81,799	11,779	10,698	545	3,143
Van Wert .....	43	.....	2,217	869	80	367	1,111	15,241
Vinton .....	72	285	5,890	1,150	420	498	584	8,386
Warren .....	4	.....	391	6,365	460	2,405	307	1,427
Washington .....	158	41	10,141	573	70	227	888	9,385
Wayne .....	10	.....	1,257	42,982	11,825	17,963	1,011	3,096
Williams .....	23	.....	2,383	58,966	6,015	18,463	1,281	17,989
Wood .....	77	200	2,941	5,091	.....	2,125	856	10,744
Wyandot .....	8	.....	481	12,485	645	5,063	928	4,980
Totals .....	5,192	6,856	992,929	8,784,327	1,628,432	1,896,955	74,488	702,746

## LANDS OWNED IN 1898.

Counties.	Number of Acres cultivated.	Number of Acres Pasture.	Number of Acres Woodland.	Number of Acres lying waste.	Total Number of Acres owned.
Adams .....	95,292	98,088	71,902	23,863	288,725
Allen .....	135,998	22,482	22,257	1,403	159,239
Ashland .....	147,665	81,471	26,480	2,098	215,656
Ashtabula .....	124,714	129,404	43,321	5,461	314,909
Athens .....	57,264	111,674	25,808	6,067	211,082
Auglaize .....	121,714	24,546	29,771	2,062	199,089
Belmont .....	92,187	122,036	23,168	10,106	268,297
Brown .....	109,653	107,244	27,312	9,554	254,408
Butler .....	122,690	26,422	20,570	10,923	210,590
Carroll .....	22,517	91,457	27,662	3,124	304,770
Champaign .....	148,757	28,375	25,202	2,023	214,367
Clark .....	119,594	21,390	17,396	2,198	170,487
Clermont .....	110,273	68,643	20,853	16,590	215,372
Clinton .....	161,422	20,402	22,764	4,007	255,596
Columbiana .....	142,471	66,418	25,017	4,020	248,100
Coshocton .....	90,243	156,535	47,294	8,420	297,532
Crawford .....	145,065	29,202	34,472	1,495	217,271
Cuyahoga .....	100,597	54,015	15,530	5,824	175,466
Darke .....	255,132	25,576	50,826	9,154	340,248
Defiance .....	121,002	12,744	44,024	1,501	189,241
Delaware .....	119,278	66,544	26,796	2,251	215,109
Erie .....	84,421	15,894	8,027	2,231	111,008
Fairfield .....	132,703	24,246	20,690	6,429	204,227
Fayette .....	96,023	21,245	12,429	1,127	191,382
Franklin .....	140,750	53,922	15,925	7,070	217,707
Fulton .....	126,873	22,877	22,690	668	185,438
Gallia .....	75,286	108,591	24,440	11,135	229,499
Geauga .....	74,472	99,573	28,219	1,992	214,354
Greene .....	143,101	25,727	25,374	5,535	209,737
Guernsey .....	78,656	124,029	28,577	2,278	234,340
Hamilton .....	56,316	20,424	6,764	4,907	88,421
Hancock .....	129,716	26,974	48,458	1,865	217,012
Hardin .....	121,572	24,441	27,562	1,108	194,743
Harrison .....	85,896	121,400	29,132	1,229	237,306
Henry .....	129,499	8,001	23,272	1,575	182,247
Highland .....	118,125	126,728	28,296	5,589	289,638
Hocking .....	41,240	99,223	41,270	6,751	198,689
Holmes .....	108,673	65,425	26,521	5,404	211,233
Huron .....	161,807	65,878	20,606	3,454	261,245
Jackson .....	48,543	112,261	21,570	15,294	198,708
Jefferson .....	99,020	24,022	24,964	3,251	211,197
Knox .....	122,181	116,412	28,221	1,104	278,518
Lake .....	53,154	20,921	12,996	3,674	100,806
Lawrence .....	41,729	50,228	28,155	20,402	140,622
Licking .....	161,188	165,584	45,150	3,822	375,754
Logan .....	125,892	42,784	21,519	2,674	212,909
Lorain .....	125,446	25,547	26,201	2,090	240,274
Lucas .....	78,098	8,558	12,923	5,815	104,399
Madison .....	108,560	69,064	11,755	1,255	190,735
Mahoning .....	101,119	58,680	26,198	2,179	188,151
Marion .....	116,023	44,998	16,964	488	178,422
Medina .....	132,247	59,554	28,913	1,023	221,746
Meigs .....	67,328	102,964	24,548	4,250	209,100
Mercer .....	152,471	19,608	49,261	5,591	227,081
Miami .....	132,017	5,350	14,987	11,268	163,717
Monroe .....	75,579	112,538	43,506	14,508	246,125
Montgomery .....	170,240	17,410	24,246	11,228	223,134
Morgan .....	53,374	127,421	22,537	6,011	229,343
Morrow .....	111,550	75,093	22,941	2,147	221,726
Muskingum .....	101,878	120,922	46,185	7,421	276,406
Noble .....	66,106	125,121	25,522	1,536	218,286
Ottawa .....	20,978	16,106	10,945	5,774	113,803
Paulding .....	107,716	7,776	29,417	4,774	149,683
Perry .....	60,110	103,040	22,336	5,658	191,144
Pickaway .....	132,444	71,400	17,458	6,814	228,176
Pike .....	67,966	45,989	56,583	20,696	191,224
Portage .....	126,332	26,027	26,607	4,271	263,237
Preble .....	172,657	22,033	22,010	7,071	224,771

## LANDS OWNED IN 1898—Concluded.

Counties.	Number of Acres cultivated.	Number of Acres Pasture.	Number of Acres Woodland.	Number of Acres lying waste.	Total Number of Acres owned.
Putnam .....	158,725	18,163	40,521	2,715	220,124
Richland .....	178,385	33,842	45,808	3,541	261,576
Ross .....	145,188	94,768	52,199	12,341	304,496
Sandusky .....	133,413	20,275	23,345	5,758	182,791
Scioto .....	61,510	66,190	199,638	31,704	379,042
Seneca .....	199,501	26,491	37,121	1,610	264,713
Shelby .....	173,940	32,621	44,296	3,748	254,595
Stark .....	209,653	40,132	29,618	5,851	285,254
Summit .....	120,523	54,019	20,054	6,472	201,068
Trumbull .....	129,564	136,769	45,300	4,278	315,911
Tuscarawas .....	122,540	116,029	43,415	8,218	290,202
Union .....	114,177	63,452	24,490	710	202,829
Van Wert .....	144,011	20,806	36,638	1,422	202,877
Vinton .....	38,403	80,225	36,471	14,795	169,894
Warren .....	144,007	34,929	25,726	6,716	211,378
Washington .....	113,600	133,345	59,077	14,766	320,788
Wayne .....	218,332	30,806	41,309	3,262	293,709
Williams .....	151,539	40,583	27,672	1,484	221,278
Wood .....	189,818	28,950	27,373	2,230	248,371
Wyandot .....	131,084	42,611	23,996	2,175	200,065
Totals .....	10,540,429	5,809,369	2,978,352	518,692	19,846,842



# TABLES OF COMPARATIVE STATISTICS AS COMPILED BY THE SECRETARY OF AGRICULTURE.

## COMPARATIVE TABLE SHOWING PRODUCTION OF WHEAT IN OHIO FOR EIGHT YEARS.

Counties.	Number of Bushels.							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Adams ....	804,058	241,235	97,769	199,005	340,920	273,430	270,802	218,724
Allen .....	400,588	328,024	318,955	451,775	540,700	440,895	474,100	662,237
Ashland ....	521,222	597,622	274,763	343,502	640,105	688,750	517,065	589,923
Ashtabula ...	291,870	200,208	69,913	132,485	224,074	252,818	154,956	229,553
Athens ....	181,279	202,247	191,676	130,891	178,271	159,048	160,508	120,686
Auglaize ....	509,909	399,480	365,547	566,304	787,327	548,451	664,145	783,753
Belmont ....	356,622	406,539	331,471	261,776	383,747	406,877	277,229	258,408
Brown .....	353,060	251,883	94,296	290,175	383,181	338,064	377,716	306,053
Butler .....	1,065,347	916,326	258,458	543,739	956,238	921,809	840,645	1,112,126
Carroll .....	274,745	250,066	138,622	122,356	239,344	276,070	227,240	208,935
Champaign ..	648,804	514,096	275,079	437,118	974,493	834,569	777,953	945,630
Clark .....	625,155	539,361	319,384	442,127	749,065	715,374	641,603	710,434
Clermont ....	269,413	162,288	49,276	216,692	296,308	271,791	279,173	212,861
Clinton .....	572,322	498,287	105,842	367,423	704,341	613,159	622,800	637,352
Columbiana ..	423,274	431,575	220,331	166,151	399,901	454,183	349,139	338,662
Coshocton ....	437,704	550,925	131,234	243,994	496,591	518,748	423,543	421,082
Crawford ..	453,157	482,632	195,098	344,773	512,106	519,764	374,047	455,547
Cuyahoga ....	219,437	102,382	79,742	141,978	226,981	242,137	168,893	193,789
Defiance .....	1,065,613	774,220	572,758	796,963	1,462,139	1,055,095	1,126,323	1,378,656
Delaware ....	377,332	252,054	284,279	452,197	426,500	458,224	364,418	586,028
Eric .....	279,802	208,277	62,604	159,482	353,012	344,522	303,055	353,096
Fairfield .....	354,051	414,918	182,373	237,095	379,368	468,621	345,651	429,713
Fayette .....	730,966	679,559	222,234	406,864	741,640	739,855	782,679	775,257
Franklin .....	637,272	646,045	105,151	351,528	614,692	628,196	643,949	603,418
Fulton .....	598,942	563,884	70,477	363,176	643,579	727,609	772,327	772,406
Gallia .....	512,947	365,356	322,780	436,418	443,658	509,335	413,906	608,932
Geauga .....	268,480	242,274	206,417	192,651	261,210	230,067	234,102	175,318
Greene .....	201,198	156,257	59,990	66,521	150,508	163,120	117,593	142,908
Guernsey ....	709,332	616,485	87,382	620,807	959,893	862,980	883,847	945,539
Hamilton .....	261,054	277,848	192,155	162,336	246,724	240,726	220,554	157,821
Hancock .....	289,073	260,505	48,290	168,583	259,224	280,770	300,625	286,532
Hardin .....	759,325	626,425	401,044	695,428	914,310	711,883	624,546	926,414
Harrison .....	396,011	289,929	219,319	342,880	506,589	424,988	431,393	536,778
Henry .....	226,375	234,257	159,966	143,405	236,553	239,924	211,911	154,149
Hocking .....	676,004	518,881	464,426	583,984	652,101	672,735	407,593	669,613
Holmes .....	549,559	535,638	141,729	352,977	594,279	567,631	560,235	497,366
Huron .....	218,415	189,906	200,905	108,986	148,365	159,295	156,081	113,749
Jackson .....	435,711	449,842	147,498	265,621	325,125	575,048	445,362	559,733
Jefferson .....	506,725	541,346	300,953	423,678	561,280	648,017	418,343	468,566
Knox .....	163,963	141,424	100,462	116,945	166,213	124,300	120,344	84,674
Lake .....	272,035	293,037	243,564	151,436	259,595	256,503	307,270	213,245
Lawrence ....	543,823	621,728	166,459	301,897	553,667	644,339	521,833	516,113
Licking .....	107,577	91,714	56,076	56,733	101,012	112,111	92,377	100,379
Lorain .....	97,907	67,438	51,028	82,561	129,050	102,511	91,688	82,243
Lucas .....	634,725	416,127	188,523	276,716	715,916	741,844	615,433	503,004
Madison .....	414,029	328,759	218,496	253,941	610,978	454,599	514,234	689,726
Mahoning ....	393,995	409,337	173,616	285,535	404,275	436,815	272,660	403,304
Marion .....	332,367	262,385	196,192	198,909	248,477	297,543	214,198	249,114
Medina .....	655,771	420,933	48,078	256,673	673,334	622,718	527,967	566,281
Meigs .....	326,816	408,650	119,012	117,701	303,894	402,860	217,353	206,037
Monroe .....	350,654	323,423	136,513	251,082	523,426	483,642	873,453	467,437
Montgomery ..	452,960	429,131	119,134	289,969	449,172	561,547	873,797	431,427
Morgan .....	264,998	237,824	229,454	206,729	274,612	250,888	254,014	174,102
Morrow .....	446,749	367,945	360,080	554,186	764,392	515,740	573,443	706,310
Muskingum ....	861,354	668,108	565,799	496,159	1,062,571	951,112	897,635	964,678
Noble .....	241,937	272,823	219,341	201,800	268,166	272,899	257,409	211,944
Ottawa .....	812,677	564,339	373,714	450,881	893,754	820,514	761,201	935,819
	206,117	228,180	256,094	209,280	231,053	177,113	182,734	130,931
	288,895	241,065	155,373	171,021	272,213	319,824	242,826	241,686
	464,467	429,171	289,245	241,458	421,218	474,127	373,787	254,983
	171,001	232,364	175,716	193,106	223,755	190,761	193,824	146,068
	326,944	323,890	189,782	304,214	321,063	540,903	149,681	362,019

COMPARATIVE TABLE SHOWING PRODUCTION OF WHEAT IN OHIO  
FOR EIGHT YEARS—Concluded.

Counties.	Number of Bushels.							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Paulding ...	302,566	120,950	206,530	395,159	280,151	237,331	197,852	285,522
Perry .....	829,685	806,435	233,332	193,292	262,864	248,519	267,572	198,320
Pickaway ...	800,881	951,527	187,063	628,283	995,617	661,038	934,056	916,798
Pike .....	258,229	228,109	138,219	202,966	275,604	202,270	206,335	180,950
Portage ....	457,506	370,609	130,141	179,519	372,139	422,489	318,225	338,368
Preble .....	922,193	601,159	459,883	568,561	922,364	723,090	621,057	746,919
Putnam ...	643,313	561,813	444,928	730,761	862,626	614,237	516,528	774,959
Richland ...	615,171	617,176	316,239	423,980	627,919	727,374	531,424	598,408
Ross .....	760,329	771,331	328,800	464,813	883,977	640,796	752,274	650,307
Sandusky ..	697,025	740,777	472,128	677,338	873,048	792,080	589,956	830,766
Scioto .....	288,828	283,944	152,346	153,666	247,476	215,339	202,243	138,537
Seneca ....	891,039	874,190	470,381	706,315	1,065,511	1,065,372	767,815	1,141,921
Shelby .....	505,042	351,181	321,904	452,382	786,867	541,761	606,196	727,943
Stark .....	993,695	900,724	296,291	447,385	903,250	1,021,223	786,472	880,450
Summit ....	614,415	525,724	241,912	247,642	530,332	599,064	437,499	479,843
Trumbull ..	296,383	245,415	55,433	122,770	255,749	285,943	171,013	205,615
Tuscarawas.	515,940	500,700	201,480	299,399	503,875	527,685	456,942	453,506
Union .....	292,468	298,462	41,869	160,091	393,961	396,265	348,025	422,619
Van Wert ..	559,256	365,988	455,590	618,318	703,355	516,542	413,270	579,746
Vinton ....	134,096	107,085	88,650	78,035	106,679	112,742	100,673	66,531
Warren ....	529,844	411,865	44,287	346,980	585,264	576,531	597,410	616,967
Washington.	394,084	417,713	425,406	399,742	482,794	434,150	425,255	301,685
Wayne .....	867,836	945,872	306,584	483,730	1,117,768	1,183,590	772,890	946,999
Williams ..	352,437	286,815	221,835	367,543	445,074	486,788	429,240	608,117
Wood .....	796,772	724,633	505,318	638,653	905,540	818,235	556,859	802,527
Wyandot ..	423,694	418,757	221,762	329,670	533,212	436,494	424,276	472,157
Total prod	41,041,671	36,718,686	19,511,788	28,759,647	45,587,534	43,121,599	38,381,598	42,851,767
Total area	2,637,788	2,273,712	2,574,364	2,488,855	2,429,062	2,526,870	2,879,094	2,613,281

Average area for 8 years, 2,552,193 acres.

Average product for 8 years, 36,984,286 bushels.

**COMPARATIVE TABLE SHOWING PRODUCTION OF BARLEY IN OHIO  
FOR EIGHT YEARS.**

Counties.	Number of Bushels.							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Adams .....		130		86	519	154	400	76
Allen .....	2,737	3,854	1,063	1,216	532	1,241	903	1,351
Ashland .....	2,798	3,640	3,222	4,274	8,647	3,322	3,116	6,817
Ashtabula .....	962	1,637	1,489	1,538	1,807	1,340	2,687	10,549
Athens .....				6				170
Aulgaize .....	3,304	6,590	21,324	81,715	36,478	23,972	22,492	25,798
Belmont .....	1,381	1,429	1,547	1,962	1,454	1,047		1,239
Brown .....			40				185	
Butler .....	20,695	62,621	56,405	153,324	119,361	99,333	51,755	43,301
Carroll .....	86	55	76	120	124	50	75	375
Champaign .....	1,345	640	430	324	1,756	90	220	1,115
Clark .....	144	569	1,247	6,635	8,255	5,617	2,890	6,885
Clermont .....	140	8		219	36	100	20	10
Clinton .....	585	1,110	338	1,012	2,831	447	1,656	1,893
Columbiana .....	700	503	345	335	367	432	693	1,881
Coshocton .....	279	15	125	14	18	21	26	35
Crawford .....	5,179	4,668	5,827	3,689	6,319	2,543	4,482	5,198
Cuyahoga .....	530	194	51		497	428	250	1,020
Darke .....	14,860	13,473	82,098	31,212	50,100	16,046	16,632	24,320
Defiance .....	27,287	21,679	18,594	17,928	15,718	9,507	4,638	12,060
Delaware .....		200	25			75	300	
Erie .....	16,019	18,392	13,394	19,116	28,788	22,948	23,621	45,587
Fairfield .....	460	895	2,144	1,323	1,372	145	770	746
Fayette .....	172	466		206	300	300	275	
Franklin .....		1,000	32	24	1,730	950	6	
Fulton .....	12,432	6,962	5,118	9,096	3,198	2,907	2,950	19,105
Gallia .....	10	3						120
Geauga .....	237	198	68		150		189	1,067
Greene .....	395	2,254	225	6,158	7,378	4,961	1,911	4,053
Guernsey .....	270	829	1,033	337		112	175	244
Hamilton .....	4,251	14,697	7,066	32,062	80,983	109,582	8,501	13,271
Hancock .....	5,768	4,032	4,963	4,565	2,400	432	433	1,357
Hardin .....	250	386		50	122	72	1,040	570
Harrison .....	1,204	1,170	480	250	159	83	290	228
Henry .....	42,163	40,884	20,785	13,066	7,468	3,709	1,104	7,450
HIGHLAND .....		26	464	1,130	894	223		185
Hocking .....	10				308	190	166	99
Holmes .....	638	1,161	786	829	1,689	915	634	2,191
Huron .....	9,973	8,828	4,938	5,552	10,697	5,362	4,972	12,153
Jackson .....				4				10
Jefferson .....	1,142	1,063	1,817	1	1,184	882	2,101	442
Knox .....	530	84	211	1,462	440	151	48	496
Lake .....	314	417	690	2,728	2,950	949	2,442	6,415
Lawrence .....			48					
Licking .....	245	694		109	8,490	369	140	480
Logan .....	855	2,215	1,611	2,321	8,521	1,777	1,530	2,107
Lorain .....	2,303	742	518	1,216	2,810	5,101	2,680	8,590
Lucas .....	10,965	8,544	8,461	6,968	6,043	5,665	6,064	16,072
Madison .....	250	305	90	389	1,600	1,387	3,828	4,009
Mahoning .....	540	49	230	93	417	792	246	876
Marion .....	659	92	480	578	1,045		448	2,275
Medina .....	2,372	1,068	57	200	22	133	204	999
Meigs .....		623	1,000	862	1,274	1,295	743	432
Mercer .....	6,360	5,463	26,828	41,492	39,343	30,436	17,406	15,053
Miami .....	5,346	4,119	12,296	13,661	21,675	12,299	11,803	14,601
Monroe .....					10		20	40
Montgomery .....	2,987	9,480	14,025	30,209	33,480	19,980	23,436	24,480
Morgan .....	65	2	41	61	151	98	28	
Morrow .....			84	464	181	262	258	480
Muskingum .....	200	225	1,459	1,467	3,209	1,108	900	515
Noble .....		100	50	425	90			
Ottawa .....		52,933	61,296	47,118	27,782	20,304	16,049	23,347
Paulding .....	74,924	32,166	6,611	2,546	862	569	165	365
Perry .....	25		80	87	251	164	123	72
Pickaway .....		1,200		1,300	627		378	22
Pike .....		680			192		172	5,150
Portage .....	520		156	1,621	609	45	325	1,615
Preble .....	1,785	2,046	8,087	12,878	23,155	9,038	8,711	6,846
Putnam .....	33,158	29,547	9,386	6,968	5,804	989	314	1,905
Richland .....	5,088	5,678	7,412	10,332	18,907	10,933	7,468	11,344

**COMPARATIVE TABLE SHOWING PRODUCTION OF BARLEY IN OHIO  
FOR EIGHT YEARS.—Concluded.**

Counties.	Number of Bushels.							
	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.
Ross .....	.....	400	15	3,961	3,491	211	200	110
Sandusky .....	5,346	5,425	4,566	7,244	9,064	3,418	4,456	11,773
Scioto .....	820	1,105	500	1,249	196	.....	1,025	1,290
Seneca .....	2,285	780	151	3,352	2,061	1,491	802	2,237
Shelby .....	4,302	8,001	33,949	60,875	42,373	19,917	19,249	23,207
Stark .....	1,429	806	899	1,897	1,657	1,064	2,978	2,720
Summit .....	1,008	776	450	415	491	105	110	985
Trumbull .....	.....	75	18	214	175	300	156	108
Tuscarawas .....	362	1,162	51	56	182	.....	37	1,742
Union .....	234	118	.....	26	3	.....	90	139
Van Wert .....	32,271	41,948	10,410	9,143	7,110	3,281	1,946	7,236
Vinton .....	.....	250	.....	.....	.....	.....	.....	.....
Warren .....	9,830	12,217	9,934	30,365	16,895	1,132	19,232	14,333
Washington .....	28	.....	301	.....	.....	.....	.....	87
Wayne .....	1,615	3,015	680	1,116	334	399	160	1,457
Williams .....	13,512	14,547	10,164	6,207	3,483	2,347	1,408	2,889
Wood .....	62,237	42,991	21,091	12,622	18,404	14,936	18,449	36,815
Wyandot .....	388	516	.....	370	610	.....	345	114
Total product.	539,812	519,305	462,859	676,383	715,570	480,986	339,140	509,337
Total area.....	20,254	21,008	32,563	43,313	82,179	15,581	14,685	20,884

Average area for 8 years, 25,058 acres.

Average product for 8 years, 530,424 bushels.

## COMPARATIVE TABLE SHOWING PRODUCTION OF RYE IN OHIO FOR EIGHT YEARS.

Counties.	Number of Bushels.							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Adams .....	2,649	6,914	2,410	2,381	1,851	1,772	2,108	2,983
Allen .....	2,562	3,035	6,242	7,275	8,415	3,853	9,247	25,881
Ashland .....	2,935	13,210	4,951	3,270	2,965	2,412	1,528	3,391
Ashtabula .....	6,671	8,288	6,214	10,454	12,018	7,964	5,648	8,406
Athens .....	.....	1,835	2,606	1,167	134	242	767	545
Auglaize .....	3,600	5,629	4,709	4,739	7,711	4,741	8,988	22,682
Belmont .....	1,529	9,206	17,825	5,756	3,822	1,756	1,878	1,028
Brown .....	4,501	12,668	4,432	8,346	4,994	3,734	5,638	5,454
Butler .....	886	6,298	1,800	2,212	3,347	1,254	770	1,264
Carroll .....	2,277	6,454	3,074	2,034	1,834	1,256	1,344	1,733
Champaign .....	2,018	4,463	1,815	2,881	5,771	4,111	2,302	9,391
Clark .....	2,174	9,406	11,732	13,623	16,788	16,145	6,752	15,984
Clermont .....	9,462	10,649	4,011	13,968	10,816	7,190	10,814	13,115
Clinton .....	3,852	8,403	2,269	1,847	2,193	1,174	1,901	3,979
Columbiana .....	2,502	7,634	3,648	3,372	3,778	2,069	2,700	4,655
Coshocton .....	5,662	26,262	11,019	8,606	4,935	2,063	1,467	3,246
Crawford .....	1,519	3,784	1,235	5,579	5,697	4,849	1,983	3,560
Cuyahoga .....	9,265	15,982	9,638	12,520	22,729	15,606	10,951	8,450
Darke .....	8,735	16,759	15,950	10,198	16,612	8,062	11,164	31,252
Defiance .....	2,221	3,226	6,183	11,544	6,986	3,875	4,732	16,287
Delaware .....	2,313	3,273	1,890	2,295	1,825	817	5,427	5,798
Erie .....	3,883	13,591	12,477	12,656	10,682	6,447	3,706	7,864
Fairfield .....	3,853	15,167	7,189	4,061	3,203	1,618	3,788	6,291
Fayette .....	1,342	11,725	5,466	7,154	5,255	2,246	3,351	3,351
Franklin .....	3,581	21,017	4,271	3,658	3,169	1,289	649	19,191
Fulton .....	6,498	10,546	16,193	15,973	10,702	12,577	5,541	1,142
Gallia .....	1,024	2,121	1,408	1,446	491	367	751	679
Geauga .....	1,829	5,335	2,415	1,437	1,880	1,080	775	13,074
Greene .....	1,289	8,228	4,091	7,242	9,254	4,396	6,310	42,493
Guernsey .....	1,551	6,524	4,073	1,801	2,114	1,185	2,519	14,316
Hamilton .....	12,000	17,581	8,460	12,753	13,162	12,974	10,525	47,166
Hancock .....	3,887	6,529	6,173	17,601	17,067	15,406	14,030	22,617
Hardin .....	3,642	3,527	2,825	3,087	8,477	11,414	10,107	356
Harrison .....	559	1,414	1,501	1,403	892	133	248	98,984
Henry .....	43,195	58,393	67,203	74,818	111,350	60,985	42,578	7,375
Highland .....	3,702	19,533	4,778	5,362	3,879	3,432	3,478	1,006
Hocking .....	1,840	2,167	1,740	1,097	1,314	915	1,006	4,336
Holmes .....	7,042	17,048	6,322	7,495	7,500	4,170	2,119	2,391
Huron .....	2,851	8,907	3,697	6,816	5,587	4,654	2,391	86
Jackson .....	146	802	1,086	384	100	40	92	844
Jefferson .....	410	2,731	4,814	1,521	741	602	602	4,300
Knox .....	5,032	20,500	7,931	5,467	3,019	2,260	1,701	7,550
Lake .....	5,073	10,830	12,884	12,658	17,833	8,909	7,400	243
Lawrence .....	264	454	615	934	782	603	325	7,328
Licking .....	12,721	37,155	22,547	9,617	5,394	2,144	8,189	14,436
Logan .....	4,267	7,037	5,015	5,287	8,614	4,357	4,867	921
Lorain .....	1,245	7,570	5,179	4,329	4,529	2,561	921	628
Lucas .....	11,029	22,263	24,206	37,140	28,777	24,613	17,630	33,165
Madison .....	355	7,725	8,008	4,765	7,666	3,529	4,658	2,865
Mahoning .....	2,959	12,813	2,616	1,683	4,232	5,415	2,651	2,122
Marion .....	1,770	2,951	1,238	3,092	4,267	3,636	2,122	474
Medina .....	5,084	21,939	6,383	4,276	4,133	2,120	563	115
Meigs .....	1,003	2,420	1,876	778	357	450	563	69,903
Mercer .....	6,050	9,263	16,229	12,035	20,885	8,587	16,089	3,100
Miami .....	1,905	7,623	9,193	5,046	4,524	2,776	3,100	2,707
Montroe .....	3,284	11,289	13,562	4,073	2,696	1,937	2,707	7,814
Montgomery .....	1,785	5,470	5,002	3,504	4,700	4,139	7,814	1,007
Morgan .....	349	2,163	5,232	2,929	2,016	790	1,007	11,522
Morrow .....	3,287	9,990	4,998	7,819	6,551	9,622	7,179	5,543
Muskingum .....	3,436	12,737	15,952	6,280	4,816	4,017	6,721	540
Noble .....	842	3,109	4,830	2,171	871	818	563	12,810
Ottawa .....	4,347	10,449	9,734	22,332	14,014	11,647	6,533	28,907
Paulding .....	9,060	6,633	8,802	12,905	8,897	6,943	9,967	2,325
Perry .....	907	4,482	5,701	2,220	1,693	1,933	1,124	80
Pickaway .....	1,178	14,263	3,216	4,163	2,106	790	19	753
Pike .....	1,410	2,246	968	511	522	67	753	7,596
Portage .....	4,020	14,599	5,328	3,997	3,708	1,927	2,744	65,979
Preble .....	1,644	5,793	5,216	3,112	795	4,990	2,744	6,871
Putnam .....	5,371	8,633	11,088	24,673	22,791	24,415	21,602	.....
Richland .....	6,138	17,553	7,031	10,231	12,100	9,026	4,599	.....

## COMPARATIVE TABLE SHOWING PRODUCTION OF RYE IN OHIO FOR EIGHT YEARS.—Concluded.

Counties.	Number of Bushels.							
	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.
Ross .....	8,286	11,730	6,665	4,341	4,779	1,170	679	1,721
Sandusky .....	2,762	10,074	8,806	12,086	13,098	10,527	3,672	12,046
Scioto .....	716	792	652	941	1,371	86	621	34
Seneca .....	1,700	3,928	1,061	4,796	3,430	5,072	2,155	7,668
Shelby .....	4,205	5,786	5,727	10,254	10,727	8,530	8,662	10,728
Stark .....	3,337	12,751	3,944	4,144	4,671	1,967	1,021	1,261
Summit .....	3,406	7,846	4,571	3,178	4,908	1,923	499	437
Trumbull .....	3,670	10,370	3,018	5,255	4,632	1,756	1,016	984
Tuscarawas .....	3,218	11,958	5,005	5,130	3,967	1,975	1,817	4,361
Union .....	1,742	4,853	1,470	1,261	3,768	3,709	4,120	13,764
Van Wert .....	6,851	7,663	20,510	23,152	38,055	24,522	42,211	135,708
Vinton .....	446	820	1,319	676	149	137	90	102
Warren .....	2,070	11,877	1,665	4,295	3,423	325	2,681	4,389
Washington .....	1,881	5,406	13,763	5,252	3,126	1,551	2,091	1,431
Wayne .....	1,822	9,793	1,785	3,688	5,119	1,400	343	1,594
Williams .....	3,444	7,219	9,376	14,838	7,926	4,339	3,435	8,645
Wood .....	5,801	11,070	15,124	24,651	25,389	35,184	24,176	41,244
Wyandot .....	2,609	4,942	2,545	3,970	5,207	3,329	2,900	12,130
Total product.	339,757	855,120	617,544	671,807	710,303	508,905	446,696	1,049,740
Total area ....	25,737	65,684	99,639	72,429	48,223	43,244	55,907	67,082

Average area for 8 years, 60,116 acres.

Average product for 8 years, 649,934 bushels.

## COMPARATIVE TABLE SHOWING PRODUCTION OF OATS IN OHIO FOR EIGHT YEARS.

Counties.	Number of Bushels.							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Adams .....	21,438	43,329	77,689	38,975	38,209	43,385	25,051	15,832
Allen .....	281,999	349,308	401,856	811,852	382,106	273,388	294,659	322,305
Ashland .....	587,134	609,853	571,221	544,881	598,441	462,819	481,381	550,468
Ashtabula ..	653,504	618,908	870,931	908,118	658,968	432,824	420,912	725,428
Athens .....	26,205	32,725	58,611	31,493	42,979	81,567	19,717	13,064
Auglaize .....	367,136	436,821	509,027	413,973	404,383	305,686	332,991	317,358
Belmont .....	133,704	183,874	228,195	144,951	228,454	246,583	192,985	196,175
Brown .....	69,462	107,478	117,588	118,400	130,405	114,575	85,210	64,915
Butler .....	119,349	234,489	584,500	399,513	293,559	243,972	193,296	191,794
Carroll .....	364,014	375,584	403,262	357,465	370,675	344,890	417,431	409,869
Champaign ..	262,664	278,744	389,235	303,857	258,400	162,719	146,161	238,534
Clark .....	159,362	196,345	224,295	212,029	198,085	154,270	126,973	145,715
Clermont .....	119,974	117,593	157,480	190,139	183,642	146,733	125,192	109,825
Clinton .....	53,357	99,373	183,517	100,621	128,794	88,832	73,638	79,638
Columbiana ..	599,204	606,300	651,654	639,332	599,833	521,166	538,715	649,130
Coshocton .....	214,135	192,631	285,635	231,328	270,444	294,642	243,475	266,338
Crawford .....	809,864	708,046	769,408	1,002,133	752,136	626,156	633,115	540,892
Cuyahoga .....	573,862	459,889	560,811	633,754	566,499	361,944	344,343	498,768
Darke .....	567,625	628,447	690,847	607,100	608,590	513,673	477,028	550,255
DeFrance .....	630,863	468,003	417,897	513,670	558,774	378,901	274,653	354,490
Delaware .....	456,958	320,801	522,712	377,566	283,946	219,903	221,317	241,698
Erie .....	464,848	463,806	418,318	451,054	427,375	391,240	248,254	349,309
Fairfield .....	77,676	78,083	227,403	104,263	124,486	94,768	80,910	87,417
Fayette .....	30,060	46,186	156,590	45,668	52,841	36,946	32,672	29,459
Franklin .....	265,306	306,708	462,816	217,992	207,111	155,916	151,719	131,999
Fulton .....	770,624	568,658	632,212	804,581	627,060	563,084	397,125	624,583
Gallia .....	23,854	51,727	41,292	23,279	40,060	47,151	28,653	21,062
Geauga .....	151,831	423,622	526,633	446,775	439,415	283,941	223,607	370,003
Greene .....	107,115	139,219	282,940	193,468	173,284	130,808	100,017	100,379
Gurnsey .....	132,193	137,928	174,673	116,344	182,915	192,955	180,529	181,625
Hamilton .....	45,988	79,636	194,096	147,535	106,828	94,023	77,060	55,582
Hancock .....	370,191	352,392	445,754	493,191	472,052	307,126	329,261	345,803
Hardin .....	309,389	329,230	492,936	417,137	370,528	262,035	338,669	274,546
Harrison .....	165,262	170,958	195,070	135,440	194,500	172,709	178,715	173,983
Henry .....	416,538	352,776	403,213	417,420	356,011	279,991	150,376	232,612
Highland .....	14,254	36,029	86,294	43,017	58,969	50,353	30,395	29,032
Hocking .....	18,293	24,507	58,315	23,915	35,029	31,171	20,921	17,849
Holmes .....	464,464	464,954	510,123	507,230	515,572	438,114	441,271	601,449
Huron .....	937,284	818,368	875,667	989,998	992,621	683,970	630,327	780,033
Jackson .....	8,053	20,342	40,613	20,717	33,196	22,731	19,644	14,860
Jefferson .....	279,982	300,346	307,222	223,884	298,466	311,718	284,758	288,317
Knox .....	209,216	331,494	379,608	337,956	351,141	320,495	341,670	372,531
Lake .....	214,113	282,175	239,411	294,598	267,447	232,121	165,651	208,511
Lawrence .....	34,878	50,858	43,048	38,070	42,580	53,966	38,194	18,935
Licking .....	312,913	348,066	673,217	303,111	294,847	231,528	286,006	281,005
Logan .....	231,957	288,160	401,431	188,975	331,508	170,022	204,455	198,499
Lorain .....	807,259	675,658	903,089	813,945	721,001	469,554	426,796	478,748
Lucas .....	466,114	405,204	393,298	447,597	393,938	293,292	211,677	275,509
Madison .....	148,780	202,909	214,235	166,287	127,429	94,091	81,493	107,070
Mahoning .....	507,861	542,067	292,377	565,506	488,696	460,094	344,690	510,911
Marion .....	588,409	404,892	636,250	528,323	511,523	361,590	415,313	405,846
Medina .....	804,636	777,848	760,348	715,886	742,772	617,536	625,046	723,861
Meigs .....	46,732	54,595	69,601	30,043	52,232	47,656	33,512	25,968
Mercer .....	429,134	606,476	703,071	664,059	651,413	480,016	497,915	535,724
Miami .....	441,606	522,361	553,379	468,301	415,013	408,432	386,272	438,245
Monroe .....	102,733	122,154	141,484	84,837	145,595	135,190	119,043	112,078
Montgomery ..	313,473	345,303	463,801	409,472	357,536	320,096	256,308	268,675
Morgan .....	42,942	44,898	77,174	75,885	79,523	74,088	39,093	26,892
Morrow .....	541,713	440,993	540,871	484,332	497,614	362,417	381,453	406,232
Muskingum .....	95,445	117,932	202,966	133,479	191,586	183,778	164,990	132,114
Noble .....	59,972	74,511	101,641	79,965	102,586	80,838	66,464	61,509
Ottawa .....	278,361	287,823	310,856	369,847	285,422	172,195	138,089	131,408
Paulding .....	421,621	290,712	263,431	330,957	233,769	170,769	100,358	138,271
Perry .....	24,595	34,666	68,025	45,220	52,193	33,162	40,667	29,040
Pickaway .....	18,707	38,522	155,121	41,041	42,739	32,074	17,538	24,010
Pike .....	8,641	32,709	47,507	21,904	38,182	24,210	21,254	19,257
Portage .....	683,564	702,875	810,075	628,969	616,094	431,411	422,926	673,018
Preble .....	228,781	318,380	369,609	407,764	370,625	384,496	276,061	266,692
Putnam .....	203,548	218,534	218,941	282,320	277,064	182,680	101,286	135,680
Richland .....	797,594	787,202	759,198	878,506	855,471	666,400	684,374	711,435

COMPARATIVE TABLE SHOWING PRODUCTION OF OATS IN OHIO FOR EIGHT YEARS—Concluded.

Counties.	Number of Bushels.							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Ross .....	15,571	24,821	121,517	41,976	74,183	48,061	32,581	22,985
Sandusky ..	568,947	568,987	580,198	694,488	585,184	397,177	340,089	479,185
Scioto .....	38,621	65,546	98,342	59,984	85,288	66,625	53,887	29,157
Seneca .....	713,074	592,493	778,999	714,182	730,228	550,909	471,451	636,648
Shelby .....	638,123	565,007	621,071	589,958	596,274	407,075	444,370	451,586
Stark .....	975,546	1,100,271	1,137,122	1,263,340	966,968	779,889	798,071	1,079,115
Summit ....	716,302	701,253	759,733	722,404	636,945	450,800	465,966	682,682
Trumbull ..	709,462	754,977	940,600	930,538	573,461	423,809	304,225	571,885
Tuscarawas.	463,146	462,495	554,621	541,737	542,650	452,546	457,170	536,553
Union .....	295,708	381,050	503,789	254,670	272,663	161,122	210,065	193,346
Van Wert ..	393,048	429,682	334,965	517,944	718,065	298,318	234,657	345,182
Vinton ....	16,559	22,548	49,745	23,460	32,483	25,558	14,400	13,392
Warren .....	135,028	190,634	399,821	203,010	208,620	196,923	160,380	177,594
Washington.	146,221	154,905	208,637	110,668	199,966	156,040	124,844	99,810
Wayne .....	926,081	1,029,760	1,030,683	1,015,500	950,125	696,523	683,414	912,220
Williams ...	829,227	664,182	578,117	727,717	715,623	640,301	496,223	584,845
Wood .....	1,101,267	1,039,893	825,611	1,324,520	1,054,242	727,387	514,925	635,603
Wyandot ...	379,102	300,578	510,549	446,320	387,570	275,341	360,606	215,415
Total prod.	30,691,432	39,563,033	36,027,464	34,013,739	31,991,896	24,537,989	22,541,478	26,515,935
Total area	976,902	1,052,605	1,262,906	1,095,142	1,051,773	866,225	687,683	870,463

Average area for 8 years, 1,000,386 acres.

Average product for 8 years, 29,610,715 bushels.



COMPARATIVE TABLE SHOWING PRODUCTION OF CORN IN OHIO  
FOR EIGHT YEARS.

Counties.	Bushels (Shelled.)							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Adams .....	1,013,713	937,766	1,156,639	646,711	850,644	641,597	748,596	855,708
Allen .....	1,209,899	1,357,388	1,538,141	1,314,789	1,246,444	970,477	924,822	1,255,294
Ashland .....	968,280	831,360	968,200	911,977	463,112	465,285	615,807	714,046
Ashtabula .....	690,001	448,283	558,988	618,204	711,620	130,104	255,769	459,465
Athens .....	515,325	477,430	515,263	498,507	421,826	420,829	450,869	494,990
Auglaize .....	1,554,545	1,403,978	2,012,775	1,347,947	1,259,745	1,049,422	1,132,936	1,132,127
Belmont .....	1,064,474	1,844,974	1,123,655	824,700	621,784	849,848	926,548	918,058
Brown .....	1,249,513	1,616,065	1,413,269	1,020,024	955,891	890,880	994,605	1,128,768
Butler .....	2,069,862	1,942,276	2,855,940	1,572,733	1,366,873	400,763	545,177	1,824,244
Carroll .....	580,906	439,323	612,753	496,521	271,203	393,892	537,927	504,397
Champaign .....	2,448,556	1,658,336	2,748,826	1,720,523	1,968,896	1,741,750	2,012,820	2,012,004
Clark .....	2,118,612	2,026,832	2,419,539	1,621,740	1,703,073	1,691,658	1,729,942	1,581,541
Clermont .....	1,042,754	1,000,061	1,094,808	1,189,538	636,340	645,313	818,251	817,396
Clinton .....	2,453,512	2,280,104	2,902,243	2,270,012	2,092,341	1,494,252	1,886,142	1,806,124
Columbiana .....	800,015	636,015	797,703	805,417	427,170	533,034	543,245	590,081
Coshocton .....	1,119,301	790,437	1,026,736	1,047,137	614,108	754,024	827,100	944,749
Crawford .....	151,134	1,106,100	1,375,642	1,514,750	1,083,403	887,158	951,041	961,586
Cuyahoga .....	468,740	829,351	832,100	402,182	277,535	243,684	212,815	294,156
Darke .....	3,424,666	3,102,097	4,238,209	2,609,091	2,312,433	1,951,414	2,065,138	2,473,589
Defiance .....	1,052,889	916,558	1,235,429	817,674	801,304	710,629	822,276	940,444
Delaware .....	1,522,213	1,419,185	1,737,653	1,056,614	1,243,620	957,556	1,033,741	1,292,275
Erie .....	691,550	672,009	708,363	566,006	684,943	452,103	896,409	450,166
Fairfield .....	2,012,881	1,688,068	2,341,576	1,679,819	1,885,645	1,822,385	1,980,382	1,723,389
Fayette .....	2,296,945	2,570,879	2,937,730	1,819,871	1,954,900	1,029,406	2,018,643	2,143,115
Franklin .....	2,332,885	2,523,447	3,254,039	2,280,794	2,261,157	2,045,602	2,438,590	2,183,216
Fulton .....	1,308,461	920,257	1,230,188	946,941	770,799	833,472	376,459	962,272
Gallia .....	673,396	616,806	631,697	519,875	470,702	501,052	514,195	578,475
Geauga .....	417,657	330,419	857,722	319,214	252,811	194,690	178,311	243,217
Greene .....	2,583,818	2,330,046	3,535,217	2,173,452	2,155,070	797,278	2,085,903	2,020,603
Guernsey .....	828,388	600,491	780,770	685,910	621,725	667,740	596,087	681,910
Hamilton .....	642,984	1,725,646	608,988	553,061	348,343	525,954	578,097	689,164
Hancock .....	1,891,306	1,736,131	2,288,577	2,270,751	1,712,219	1,401,092	1,217,807	1,697,182
Hardin .....	1,440,005	1,368,508	2,055,035	1,274,403	1,237,701	828,292	1,037,153	1,038,381
Harrison .....	646,208	667,615	626,528	566,971	827,067	422,243	592,066	563,236
Henry .....	2,217,175	2,038,971	2,398,664	1,964,730	1,809,368	1,423,626	660,208	1,376,851
Highland .....	1,661,906	1,691,519	2,132,133	1,427,075	1,325,730	127,895	1,248,099	1,522,618
Hocking .....	519,824	445,936	520,207	417,142	421,497	362,862	378,994	375,072
Holmes .....	860,445	705,325	852,011	695,059	437,789	482,660	696,827	782,664
Huron .....	1,223,828	894,766	1,080,982	1,061,286	706,037	644,419	645,104	627,870
Jackson .....	432,326	347,166	432,923	278,399	849,220	211,574	293,387	293,227
Jefferson .....	638,230	475,989	649,459	535,160	258,969	414,223	563,266	564,536
Knox .....	1,399,337	1,634,432	1,420,425	1,108,078	718,143	823,530	1,035,182	1,109,050
Lake .....	246,321	250,227	227,714	285,149	178,749	144,311	156,415	147,158
Lawrence .....	466,115	444,250	426,023	370,443	355,724	359,335	405,445	408,081
Licking .....	2,167,822	1,619,161	601,094	1,631,757	1,536,529	1,619,845	1,581,223	1,713,804
Logan .....	1,713,214	1,606,952	2,080,260	1,237,761	1,476,866	936,449	1,310,559	1,290,190
Lorain .....	794,862	698,356	686,901	651,903	494,058	382,416	374,868	386,789
Lucas .....	950,242	696,837	890,480	699,335	582,761	543,112	255,074	627,179
Madison .....	2,871,614	2,922,451	3,916,307	2,812,326	3,868,560	2,745,409	2,494,673	2,570,667
Mahoning .....	644,468	426,137	2,434,464	470,950	388,234	398,068	358,961	411,411
Marion .....	1,825,765	1,451,218	2,060,057	1,834,453	1,066,897	1,222,733	1,422,538	1,345,615
Medina .....	830,555	677,388	817,701	687,115	471,318	451,508	522,823	649,209
Meigs .....	559,523	425,883	509,077	411,688	330,353	385,341	426,818	433,386
Mercer .....	1,566,649	1,416,796	1,989,803	1,533,879	1,472,242	964,603	1,054,408	1,501,346
Miami .....	2,112,388	1,907,044	2,705,212	1,440,979	1,502,462	1,504,406	1,831,041	1,748,568
Monroe .....	634,068	537,453	596,458	517,222	282,026	368,498	532,315	670,397
Montgomery .....	1,918,425	1,653,414	2,642,318	1,442,263	1,547,585	1,151,464	1,161,650	1,888,576
Morgan .....	589,811	578,362	662,452	522,137	400,671	574,347	512,405	571,745
Morrow .....	1,239,920	856,106	1,067,102	1,004,100	784,083	650,708	691,654	765,971
Muskingum .....	1,175,889	945,800	1,203,634	1,091,455	296,294	953,001	1,086,306	985,246
Noble .....	372,268	813,915	653,156	620,916	394,762	514,809	557,043	667,750
Ottawa .....	683,287	813,510	921,456	853,920	477,662	375,293	403,414	477,401
Paulding .....	1,673,118	1,110,984	1,581,105	1,473,627	874,636	861,801	546,449	966,905
Perry .....	668,205	623,430	1,246,476	587,840	484,232	480,328	589,786	516,447
Pickaway .....	2,300,028	2,615,699	4,020,015	2,611,930	2,738,610	2,817,572	2,847,562	2,166,418
Pike .....	830,235	737,540	1,030,174	590,062	932,635	470,750	690,179	639,080
Portage .....	646,067	848,948	637,373	563,746	417,963	417,922	380,334	471,896
Preble .....	2,020,943	1,884,200	2,610,078	1,673,061	1,712,613	1,212,531	1,567,571	1,779,052
Putnam .....	2,067,899	2,433,846	2,398,700	2,482,136	2,003,212	1,730,568	1,730,431	1,707,288
Richland .....	1,197,431	977,172	1,089,980	1,092,156	661,701	584,899	807,572	888,381
Ross .....	2,068,608	2,218,451	3,160,790	2,034,409	2,497,783	1,866,638	1,779,396	2,307,684

COMPARATIVE TABLE SHOWING PRODUCTION OF CORN IN OHIO  
FOR EIGHT YEARS—Concluded.

Counties.	Bushels (Shelled)							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Sandusky ..	1,665,140	1,497,866	1,496,354	1,502,198	1,273,177	984,078	826,075	1,337,646
Scioto .....	826,133	715,199	644,455	716,036	838,800	529,879	710,322	621,062
Seneca .....	1,856,587	1,420,613	1,801,697	1,806,580	1,472,872	1,136,157	975,924	1,400,739
Shelby .....	1,714,186	1,332,986	2,206,410	1,288,781	1,542,529	915,715	1,255,037	1,475,850
Stark .....	1,378,993	1,125,604	1,434,023	1,425,923	724,204	766,205	948,792	1,075,221
Summit ....	809,622	614,026	791,030	728,837	453,925	466,096	463,667	605,824
Trumbull ..	593,526	416,520	640,269	603,299	432,568	353,074	271,838	365,887
Tuscarawas.	898,526	684,775	864,204	891,503	506,476	583,792	693,476	727,270
Union .....	1,735,316	1,503,679	2,260,187	1,438,152	1,437,624	1,070,589	1,323,909	1,307,792
Van Wert ..	1,609,615	1,861,126	2,046,000	2,005,548	1,850,425	1,319,471	1,025,480	1,883,800
Vinton .....	343,121	300,466	364,855	315,840	309,097	230,309	283,769	258,910
Warren .....	1,859,266	1,745,400	3,749,484	1,544,712	1,035,442	1,332,692	1,492,633	1,642,697
Washington	799,270	759,702	701,817	661,374	412,611	538,376	692,008	775,404
Wayne .....	1,561,285	1,346,455	1,533,031	1,458,537	885,464	716,322	926,272	1,129,765
Williams ..	1,043,677	776,751	1,045,812	745,642	745,306	663,513	405,836	879,295
Wood .....	2,481,132	2,503,655	2,861,704	2,871,727	2,313,169	2,133,908	1,515,235	2,075,381
Wyandot ..	1,444,258	1,113,728	1,564,721	1,538,340	1,211,825	866,567	900,253	829,142
Total prod.	11,214,148	10,004,970	13,796,274	10,247,445	8,805,607	77,229,446	81,892,100	93,832,652
Total area	3,057,712	2,999,836	3,230,331	3,037,014	2,910,206	2,655,060	2,458,880	2,634,436

Average area for 8 years, 2,872,619 acres.

Average product for 8 years, 99,527,839 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF MEADOWS IN OHIO  
FOR EIGHT YEARS.

Counties.	Tons of Hay.							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Adams .....	12,169	9,486	9,155	9,343	11,880	11,277	13,694	15,003
Allen .....	26,105	21,497	22,519	11,830	27,339	23,629	26,736	27,990
Ashland .....	32,279	21,597	27,656	17,352	36,651	25,032	37,464	44,226
Ashtabula .....	56,763	50,451	47,646	39,327	63,848	72,294	67,175	77,899
Athens .....	22,122	17,941	13,149	7,010	21,760	23,818	28,758	33,387
Auglaize .....	16,979	16,442	16,117	9,803	19,146	17,497	17,455	18,348
Belmont .....	38,728	28,876	27,803	14,597	29,822	32,370	40,800	52,359
Brown .....	13,710	13,450	12,411	12,652	16,937	14,772	17,249	20,401
Butler .....	15,952	14,096	11,287	21,107	17,785	17,334	20,859	22,120
Carroll .....	29,316	22,602	23,305	12,547	31,634	30,077	39,842	41,259
Champaign .....	14,081	15,566	15,304	7,452	16,963	14,430	16,601	21,074
Clark .....	17,205	18,210	16,840	12,345	21,613	22,367	28,265	24,463
Clermont .....	17,214	14,145	11,332	18,107	25,330	3,588	29,138	29,701
Clinton .....	16,359	11,792	12,407	10,590	24,236	20,441	22,291	25,796
Columbiana .....	46,204	38,475	39,796	15,632	44,913	44,556	53,896	60,673
Coshocton .....	37,051	26,182	26,557	13,152	24,800	31,004	42,430	44,332
Crawford .....	34,516	31,545	30,801	20,732	35,508	28,142	36,470	35,382
Cuyahoga .....	36,317	34,363	31,979	23,149	40,123	43,134	48,285	56,863
Darke .....	19,123	19,420	17,323	9,264	16,464	14,215	15,801	21,049
Defiance .....	21,201	18,613	21,487	13,697	21,646	22,066	19,034	18,067
Delaware .....	38,424	35,558	33,590	33,422	55,716	51,316	53,745	88,378
Erie .....	14,449	11,532	12,919	9,634	15,482	15,196	17,007	18,589
Fairfield .....	29,368	17,466	24,092	16,008	30,887	29,298	32,648	31,866
Fayette .....	12,188	14,149	8,442	4,103	14,099	19,690	14,474	14,554
Franklin .....	31,100	30,987	29,686	20,002	41,234	42,160	46,741	45,110
Fulton .....	24,375	16,721	25,979	12,892	24,259	22,840	21,352	15,805
Gallia .....	12,848	13,312	8,985	7,516	12,224	13,304	15,390	16,888
Geauga .....	30,826	24,907	26,852	12,765	40,109	40,124	88,293	42,708
Greene .....	16,683	17,542	33,708	13,926	24,489	21,298	22,609	23,289
Guernsey .....	36,762	28,969	25,704	14,347	29,494	36,329	41,885	47,970
Hamilton .....	13,351	14,468	11,040	14,017	14,627	18,695	21,140	20,111
Hancock .....	32,407	29,540	36,044	25,407	41,533	35,119	34,506	29,471
Hardin .....	48,355	24,937	32,690	12,469	33,450	28,890	26,827	29,343
Harrison .....	30,469	28,265	26,225	12,945	33,287	33,614	38,316	44,329
Henry .....	15,874	12,077	17,182	10,577	16,854	15,174	15,676	12,868
Highland .....	21,280	15,642	14,799	14,278	26,964	19,073	21,794	25,212
Hocking .....	12,345	8,473	10,131	6,444	13,140	13,808	14,923	17,378
Holmes .....	27,125	20,827	19,911	14,668	27,886	24,619	28,525	31,364
Huron .....	40,775	33,353	30,932	26,574	51,278	40,131	45,416	45,577
Jackson .....	12,029	13,140	8,625	6,193	13,888	12,165	14,723	16,582
Jefferson .....	32,454	26,124	25,330	10,853	26,052	27,144	35,871	39,777
Knox .....	35,557	25,559	27,973	13,787	35,102	33,025	42,669	40,566
Lake .....	12,716	15,412	15,900	8,524	15,870	14,988	17,500	19,630
Lawrence .....	4,313	5,113	3,884	4,081	4,083	5,167	6,087	6,478
Licking .....	53,286	53,755	51,919	27,474	51,905	58,875	67,862	71,282
Logan .....	21,731	18,952	22,087	10,313	29,819	27,644	24,519	28,673
Lorain .....	49,466	87,790	36,527	33,482	79,180	53,727	61,826	65,706
Lucas .....	14,296	13,968	14,437	8,552	17,203	14,469	14,396	13,963
Madison .....	14,568	16,809	12,669	8,316	23,445	23,423	22,117	24,775
Mahoning .....	41,087	20,601	26,355	14,264	42,063	53,205	51,643	56,434
Marion .....	26,329	21,276	28,216	12,580	35,229	31,648	31,224	30,878
Medina .....	38,250	25,434	30,007	18,969	46,721	35,920	41,774	46,185
Meigs .....	16,659	14,717	10,720	5,338	16,837	18,894	21,411	22,414
Mercer .....	20,586	20,251	19,078	11,430	29,229	17,430	19,238	22,829
Miami .....	19,939	11,442	12,652	6,981	11,067	11,284	13,995	14,519
Monroe .....	26,592	18,950	12,724	9,201	22,438	23,136	26,408	34,569
Montgomery .....	16,307	15,132	13,257	12,625	18,141	16,307	22,261	20,436
Morgan .....	26,956	19,905	19,633	12,322	22,626	20,730	20,917	36,056
Morrow .....	41,133	31,227	29,501	18,626	49,217	39,499	42,587	48,822
Muskingum .....	44,901	32,823	35,747	18,242	35,262	43,958	51,499	54,468
Noble .....	26,720	23,465	16,370	12,326	23,149	25,861	29,592	38,673
Ottawa .....	16,387	11,232	11,107	10,006	16,026	16,884	17,018	19,083
Paulding .....	17,095	12,360	12,104	7,345	16,141	16,542	14,377	14,025
Perry .....	22,930	17,460	18,788	12,289	22,870	21,396	27,248	29,517
Pickaway .....	12,640	10,807	15,033	8,702	12,192	12,063	13,777	16,472
Pike .....	5,054	3,615	3,378	4,417	7,796	5,705	7,678	16,012
Portage .....	32,971	21,124	21,999	11,275	38,177	43,880	49,816	50,243
Preble .....	9,917	10,609	7,482	8,347	10,699	11,592	13,082	14,967
Putnam .....	18,163	17,106	20,193	12,648	37,761	21,180	24,756	20,384
Richland .....	36,086	27,010	27,976	19,070	43,400	28,193	37,125	41,283
Ross .....	12,162	11,204	9,288	5,318	14,013	10,904	13,620	16,174

**COMPARATIVE TABLE SHOWING PRODUCTION OF MEADOWS IN OHIO  
FOR EIGHT YEARS—Concluded.**

Counties.	Tons of Hay.							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Sandusky .....	22,540	20,585	23,475	18,422	23,068	15,365	19,421	16,858
Scioto .....	9,046	9,310	8,502	6,872	11,372	15,448	12,054	12,388
Seneca .....	29,520	23,896	24,938	21,752	41,128	25,712	33,183	30,645
Shelby .....	14,985	11,252	15,116	7,692	16,178	13,039	13,813	17,009
Stark .....	56,360	45,563	50,630	25,341	60,165	45,824	61,989	68,647
Summit .....	31,020	26,815	24,144	10,848	32,613	28,245	35,491	37,777
Trumbull .....	61,081	43,870	35,496	24,715	62,061	71,960	75,017	80,071
Tuscarawas .....	46,155	35,961	37,129	23,590	44,626	43,014	55,935	56,790
Union .....	28,344	25,456	19,104	13,181	42,487	38,451	32,362	38,254
Van Wert .....	28,592	25,966	25,155	10,582	30,495	23,842	22,337	23,016
Vinton .....	11,069	11,513	7,686	4,478	12,061	13,966	14,113	14,593
Warren .....	16,129	14,488	12,927	17,248	23,123	20,357	24,985	24,554
Washington .....	34,991	24,427	23,722	14,071	29,485	31,917	40,234	43,580
Wayne .....	47,541	32,591	37,849	16,858	56,252	42,143	47,473	51,617
Williams .....	30,958	28,586	34,137	21,769	27,981	22,325	24,590	22,495
Wood .....	33,997	28,847	30,465	18,758	33,647	30,514	29,408	23,231
Wyandot .....	26,922	26,371	29,925	14,080	30,041	23,028	26,465	25,985
<b>Total product .</b>	<b>2,323,978</b>	<b>1,908,963</b>	<b>1,925,389</b>	<b>1,236,315</b>	<b>2,544,248</b>	<b>2,336,794</b>	<b>2,650,066</b>	<b>2,862,482</b>
<b>Total area .....</b>	<b>2,001,111</b>	<b>661,063</b>	<b>1,941,274</b>	<b>2,037,981</b>	<b>2,239,212</b>	<b>2,002,716</b>	<b>2,159,005</b>	<b>2,163,000</b>

Average area for 8 years, 2,025,661 acres.

Average product for 8 years, 2,220,404 tons.

# COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER IN OHIO FOR EIGHT YEARS.

Counties.	Tons of Hay.							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Adams .....	2,781	7,425	1,180	1,438	1,585	3,906	1,023	1,714
Allen .....	8,868	18,067	350	1,773	9,879	26,372	5,746	8,087
Ashland .....	13,340	32,459	9,795	6,002	10,488	21,891	13,066	11,677
Ashtabula .....	3,384	6,780	4,041	1,314	879	1,004	778	1,223
Athens .....	880	2,450	400	296	959	1,148	291	288
Auglaize .....	8,468	15,585	1,967	1,512	9,501	12,148	6,622	8,236
Belmont .....	1,899	12,919	2,073	694	1,958	3,145	518	767
Brown .....	1,041	2,351	663	719	792	2,552	1,151	1,258
Butler .....	9,859	17,278	2,067	5,629	9,104	13,796	7,373	9,950
Carroll .....	2,575	8,457	826	509	1,642	6,804	2,478	1,965
Champaign .....	13,762	24,238	1,813	5,068	14,494	16,252	13,892	13,720
Clark .....	10,553	21,675	2,337	5,622	10,297	16,467	11,346	16,167
Clermont .....	2,326	4,333	905	2,022	1,536	1,304	1,804	2,140
Clinton .....	5,249	18,334	3,251	4,109	3,307	5,118	2,841	4,013
Columbiana .....	2,163	14,857	3,337	3,326	8,534	11,829	3,253	2,409
Coshocton .....	3,122	10,478	2,27	809	1,773	6,071	2,152	3,725
Crawford .....	11,323	22,271	5,346	7,100	9,281	18,711	2,494	4,810
Cuyahoga .....	1,549	4,419	2,626	2,341	1,524	2,298	1,091	934
Darke .....	21,540	30,099	1,194	4,426	20,442	25,439	15,539	18,835
Defiance .....	8,747	23,003	1,333	6,472	6,980	12,706	5,806	8,227
Delaware .....	4,947	21,587	3,003	3,688	9,217	11,055	5,461	5,507
Erie .....	4,837	10,397	2,046	3,867	2,173	5,451	5,555	5,205
Fairfield .....	7,879	22,390	4,205	7,183	12,520	11,613	5,288	5,234
Fayette .....	2,409	10,305	894	2,722	3,653	2,073	1,910	1,511
Franklin .....	5,124	19,196	8,211	5,756	5,808	8,090	6,291	7,283
Fulton .....	9,374	18,917	2,681	7,182	7,630	13,176	11,378	15,389
Gallia .....	1,127	2,892	962	514	821	1,552	516	951
Geauga .....	2,710	9,155	2,735	645	1,143	2,255	1,188	1,207
Greene .....	6,731	18,796	1,996	6,621	9,212	11,256	6,126	8,845
Guernsey .....	1,202	5,024	672	342	645	1,537	353	590
Hamilton .....	5,578	5,088	1,048	3,161	4,087	6,256	5,644	9,604
Hancock .....	19,003	32,576	1,923	3,211	12,233	23,238	7,903	14,925
Hardin .....	10,249	21,494	834	1,291	6,745	14,264	5,060	5,682
Harrison .....	2,682	5,878	1,219	315	573	2,098	470	219
Henry .....	9,331	17,744	1,935	6,326	3,201	9,931	7,877	10,443
Highland .....	3,071	13,825	883	1,811	3,022	5,361	2,023	3,361
Hocking .....	1,652	3,720	895	671	1,079	1,209	361	876
Holmes .....	4,179	15,490	12,084	3,946	4,369	13,275	9,670	9,239
Huron .....	10,359	26,941	7,175	7,878	4,769	11,912	8,156	9,682
Jackson .....	227	1,053	141	136	134	98	17	68
Jefferson .....	1,789	9,917	3,036	823	1,935	4,664	1,778	1,396
Knox .....	8,189	20,210	7,242	3,775	9,511	16,144	8,570	11,454
Lake .....	764	1,731	984	353	474	1,972	587	556
Lawrence .....	458	1,082	507	389	252	940	595	804
Licking .....	6,177	15,314	4,802	6,576	10,436	9,794	2,610	5,095
Logan .....	12,045	26,675	498	9,667	13,049	13,772	11,142	8,814
Lorain .....	3,856	14,396	4,689	4,343	2,753	5,294	3,425	2,352
Lucas .....	5,250	10,200	2,061	3,554	4,881	6,811	5,313	6,399
Madison .....	4,812	15,220	2,618	4,065	4,186	6,939	4,788	6,596
Mahoning .....	4,404	19,323	3,153	2,292	5,960	9,346	5,366	2,792
Marion .....	9,745	20,352	3,614	4,214	6,861	15,088	7,664	8,905
Medina .....	8,723	23,509	5,316	6,218	9,661	15,602	7,923	5,861
Meigs .....	1,067	3,555	595	363	1,765	2,314	616	654
Mercer .....	7,502	14,941	757	980	10,081	16,020	9,369	8,910
Miami .....	10,766	18,894	941	1,665	10,012	15,212	9,841	753
Monroe .....	634	6,285	279	64	459	472	93	285
Montgomery .....	12,192	22,432	2,041	4,194	9,959	20,678	12,418	19,582
Morgan .....	1,832	8,828	855	776	2,435	2,165	518	1,188
Morrow .....	6,063	21,713	8,205	8,343	7,746	9,950	5,414	3,716
Muskingum .....	2,712	9,283	2,617	1,050	2,590	2,120	786	1,832
Noble .....	1,081	5,352	285	384	1,099	1,314	341	365
Ottawa .....	5,601	13,296	2,186	3,017	527	4,501	4,572	3,380
Paulding .....	3,632	7,463	486	1,347	2,403	5,675	2,767	5,251
Perry .....	4,545	8,035	1,005	508	1,287	1,651	438	1,332
Pickaway .....	5,434	18,897	2,595	5,294	5,505	7,935	4,671	4,806
Pike .....	2,366	3,677	943	1,444	1,755	1,510	624	696
Portage .....	4,945	18,569	5,384	2,104	8,029	20,968	6,561	5,874
Preble .....	10,045	22,081	2,318	4,144	9,610	14,329	7,925	11,064
Putnam .....	13,955	19,852	955	2,654	7,412	12,096	6,912	10,226
Richland .....	13,068	34,156	12,199	9,499	10,140	20,488	6,306	7,209
Ross .....	4,798	11,076	2,135	3,558	5,932	5,273	1,832	3,306

**COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER IN OHIO  
FOR EIGHT YEARS—Concluded.**

Counties.	Tons of Hay.							
	1868.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Sandusky .....	10,877	21,271	6,562	7,517	7,973	16,235	16,061	17,586
Scioto .....	2,161	3,389	1,162	1,315	1,274	1,865	809	717
Seneca .....	21,565	38,937	3,438	7,473	11,799	28,525	15,091	18,666
Shelby .....	9,939	18,196	3,336	1,854	9,934	12,076	9,371	10,928
Stark .....	4,291	23,112	10,351	7,816	10,073	27,494	13,022	7,217
Summit .....	5,093	17,268	5,198	2,966	8,061	14,549	8,864	12,371
Trumbull .....	3,284	14,471	5,607	2,455	2,711	4,656	20,478	2,218
Tuscarawas .....	1,117	10,785	3,262	2,364	2,055	8,431	2,359	2,290
Union .....	5,075	19,541	1,763	3,115	6,205	11,794	5,995	7,772
Van Wert .....	8,881	13,215	586	860	6,865	13,309	4,896	7,367
Vinton .....	510	1,915	258	301	542	548	192	353
Warren .....	5,266	16,740	1,928	5,435	6,754	10,532	3,367	6,387
Washington .....	1,433	10,806	755	787	2,084	3,088	883	2,265
Wayne .....	15,416	41,009	17,941	11,188	12,758	33,169	22,936	14,446
Williams .....	10,550	21,358	3,588	7,463	8,151	16,445	10,057	13,694
Wood .....	8,382	19,424	3,277	6,289	5,592	12,657	10,878	14,375
Wyandot .....	13,686	17,888	2,185	4,150	8,679	16,249	5,505	6,583
<b>Total product ..</b>	<b>552,021</b>	<b>1,336,599</b>	<b>252,507</b>	<b>299,377</b>	<b>506,589</b>	<b>865,333</b>	<b>487,513</b>	<b>544,546</b>

Average product for 8 years, 630,561 tons.

## COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER SEED IN OHIO FOR EIGHT YEARS.

Counties.	Bushels of Seed.							
	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.
Adams .....	798	10,004	1,586	1,729	1,020	3,498	446	1,100
Allen .....	1,045	18,999	361	629	6,320	14,135	2,464	1,843
Ashland .....	989	17,618	3,726	6,137	3,812	5,066	1,107	4,862
Ashtabula .....	41	2,268	285	60	11	117	3	29
Athens .....	21	191	35	81	93	201	22	66
Auglaize .....	1,340	13,702	255	1,143	3,264	8,913	3,310	743
Belmont .....	44	8,125	422	133	127	1,337	14	10
Brown .....	143	2,798	270	639	675	408	47	127
Butler .....	570	12,466	1,751	4,518	4,884	5,225	894	4,899
Carroll .....	993	6,038	624	643	275	2,501	418	376
Champaign .....	1,980	20,524	229	4,201	8,596	18,149	1,561	1,645
Clark .....	1,244	13,109	514	7,153	7,742	17,651	3,497	5,290
Clermont .....	39	1,578	179	578	95	.....	8	139
Clinton .....	1,256	11,976	2,487	10,293	3,406	2,790	1,241	2,158
Columbiana .....	21	6,541	328	1,638	562	1,333	86	255
Coshocton .....	387	10,758	1,540	1,178	900	2,048	149	1,628
Crawford .....	1,958	20,605	3,459	15,920	7,304	7,673	1,828	1,389
Cuyahoga .....	15	1,344	58	60	11	15	2	.....
Darke .....	4,788	27,478	700	5,236	7,938	14,462	7,143	5,616
Deane .....	5,030	18,253	2,317	13,903	14,694	16,475	4,412	4,990
Delaware .....	226	8,133	678	3,200	5,620	4,886	311	1,259
Erie .....	506	9,414	1,488	3,227	1,069	2,024	762	1,188
Fairfield .....	1,211	19,902	1,289	12,844	20,573	20,040	3,826	3,083
Fayette .....	249	11,947	638	4,603	2,108	1,667	813	622
Franklin .....	419	16,952	602	8,078	6,003	8,713	1,947	2,729
Fulton .....	2,860	17,549	3,236	5,314	5,521	10,481	3,882	4,431
Gallia .....	122	817	372	84	145	278	61	247
Geauga .....	50	1,749	242	6	68	11	23	9
Greene .....	1,545	15,318	821	10,664	5,613	9,516	2,870	4,670
Guernsey .....	136	3,182	242	43	123	493	8	49
Hamilton .....	230	2,154	194	1,398	843	985	231	555
Hancock .....	3,584	27,923	2,526	2,986	14,890	15,729	3,255	3,367
Hardin .....	1,233	14,793	214	608	7,985	11,266	1,571	730
Harrison .....	2,627	5,820	716	143	169	1,022	47	20
Henry .....	4,831	20,088	2,663	8,588	10,484	11,714	3,591	3,379
Highland .....	545	18,006	1,548	5,174	3,094	3,679	1,527	2,415
Hocking .....	167	2,946	302	391	1,078	1,559	284	536
Holmes .....	1,112	12,337	6,177	5,832	1,875	4,121	1,287	5,107
Huron .....	1,910	22,836	3,076	9,986	1,298	4,990	832	2,976
Jackson .....	160	.....	.....	6	2	.....	.....	.....
Jefferson .....	61	8,979	1,689	174	168	1,800	414	63
Knox .....	836	17,008	3,565	4,816	4,716	10,085	766	1,084
Lake .....	48	1,045	60	186	30	22	10	12
Lawrence .....	33	254	107	161	3	177	19	53
Licking .....	1,736	17,562	1,248	8,543	10,876	9,724	72	376
Logan .....	1,079	16,206	207	1,465	14,245	10,247	2,754	636
Lorain .....	197	6,741	638	1,063	387	822	281	535
Lucas .....	1,582	10,172	1,069	2,745	2,180	4,800	1,412	1,097
Madison .....	224	7,896	902	8,964	4,205	4,506	442	1,163
Mahoning .....	120	7,760	360	1,196	763	902	263	275
Marion .....	1,153	14,073	1,980	8,234	8,532	10,357	323	1,513
Medina .....	1,020	18,965	1,473	2,466	2,025	3,789	580	1,622
Meigs .....	87	444	36	48	106	111	10	25
Mercer .....	2,004	15,465	237	1,467	4,784	7,660	5,831	1,459
Miami .....	1,832	13,611	482	2,336	3,109	13,565	2,647	4,907
Monroe .....	82	5,574	33	7	76	172	.....	18
Montgomery .....	1,547	16,286	888	3,589	4,606	10,737	3,066	6,741
Morgan .....	44	5,269	166	224	456	575	31	165
Morrow .....	561	17,085	2,350	13,370	8,787	6,880	396	448
Muskingum .....	114	6,170	587	427	853	822	12	176
Noble .....	44	2,451	28	152	128	168	2	2
Ottawa .....	840	8,748	1,635	1,592	191	830	723	767
Paulding .....	1,733	9,523	513	2,047	2,606	8,234	1,666	2,806
Perry .....	980	9,933	967	1,326	2,117	1,624	355	835
Pickaway .....	1,025	15,320	1,579	7,736	12,957	13,361	5,274	5,517
Pike .....	300	3,590	588	1,278	2,078	1,594	929	739
Portage .....	176	10,444	945	478	561	2,027	859	2,391
Preble .....	1,255	14,593	1,307	6,076	6,814	8,438	3,389	5,064
Putnam .....	1,199	38,306	793	1,544	4,831	12,200	2,307	1,557
Richland .....	903	32,190	4,248	10,063	4,878	6,568	1,885	2,960
Ross .....	1,240	16,134	1,709	5,792	8,699	5,808	2,379	3,241

COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER SEED IN  
OHIO FOR EIGHT YEARS—Concluded.

Counties.	Bushels of Seed.							
	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.
Sandusky .....	2,184	20,480	3,508	8,775	4,764	7,446	2,692	2,823
Scioto .....	384	1,001	565	700	324	373	183	128
Seneca .....	8,006	34,020	8,412	12,549	14,378	14,960	3,367	5,281
Shelby .....	1,377	17,083	288	1,558	5,812	6,678	2,917	2,105
Stark .....	153	12,009	1,806	6,064	1,202	1,645	1,282	2,739
Summit .....	121	7,440	655	721	625	1,377	297	1,404
Trumbull .....	88	4,408	511	64	84	178	144	238
Tuscarawas .....	76	9,106	1,654	3,547	776	3,960	330	1,720
Union .....	343	7,747	608	3,994	3,686	4,967	395	1,057
Van Wert .....	1,165	10,969	390	974	2,270	5,069	2,906	1,584
Vinton .....	9	552	19	212	335	238	37	34
Warren .....	277	9,590	896	5,981	1,191	2,153	568	1,801
Washington .....	44	6,597	171	808	439	623	56	568
Wayne .....	1,211	17,741	5,637	9,812	4,316	4,135	1,855	6,065
Williams .....	6,322	17,736	4,621	7,866	8,170	14,777	5,396	7,836
Wood .....	2,066	21,372	4,082	5,089	6,708	18,801	3,345	5,149
Wyandot .....	1,906	18,510	1,864	7,520	10,890	9,226	1,065	2,108
Total product .	90,841	1,082,581	111,210	339,290	342,472	489,256	121,028	165,145

Average product for 8 years, 336,472 bushels.



COMPARATIVE TABLE SHOWING PRODUCTION OF POTATOES IN OHIO  
FOR EIGHT YEARS.

Counties.	Number of Bushels.							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Adams .....	18,323	14,339	41,607	11,109	18,094	16,882	23,850	24,551
Allen .....	44,459	23,188	96,343	67,068	99,728	53,644	55,240	413,778
Ashland .....	88,345	62,779	110,031	145,224	93,217	64,442	67,240	96,408
Ashtabula ..	400,785	244,397	387,018	613,805	806,768	204,063	193,813	242,659
Athens .....	32,445	25,399	68,707	80,598	60,332	58,769	63,917	70,400
Auglaize .....	45,932	25,304	145,105	63,338	116,775	60,689	75,152	105,780
Belmont .....	57,129	58,726	71,118	46,414	108,399	140,346	183,101	138,033
Brown .....	38,632	29,013	91,901	49,616	50,425	21,216	56,658	102,539
Butler .....	75,759	63,323	192,155	144,883	121,501	76,658	106,384	121,746
Carroll .....	58,006	54,195	112,880	89,341	60,915	51,235	65,737	72,894
Champaign ..	41,915	21,208	95,288	56,619	105,864	57,027	86,142	166,996
Clark .....	54,574	41,529	114,023	73,590	75,585	80,437	114,914	105,449
Clermont .....	56,034	62,456	124,647	81,737	82,216	67,118	107,067	107,918
Clinton .....	40,297	27,325	80,923	46,365	54,306	24,316	57,967	72,607
Columbiana ..	185,578	149,302	255,009	326,347	169,694	163,737	236,579	166,352
Coshocton ..	71,941	65,896	123,641	115,390	89,596	83,282	96,662	131,911
Crawford .....	123,998	73,451	134,246	228,213	102,915	70,850	73,915	136,519
Cuyahoga .....	743,539	543,867	492,300	770,201	452,298	405,137	298,134	339,267
Darke .....	100,483	59,242	251,396	149,572	170,106	101,303	125,245	189,661
Defiance .....	72,774	51,514	106,928	87,436	90,554	63,863	48,556	145,140
Delaware .....	33,351	20,734	40,222	48,121	82,766	67,147	65,639	76,543
Erie .....	812,730	248,383	813,530	326,118	170,489	216,522	161,498	273,552
Fairfield .....	71,746	54,052	137,465	74,280	111,800	83,625	148,026	126,021
Fayette .....	6,011	10,757	17,240	9,443	15,846	10,907	31,552	27,968
Franklin .....	82,204	75,691	119,545	96,497	176,931	210,649	333,553	263,136
Fulton .....	140,271	88,576	112,681	148,790	112,759	139,344	68,727	197,218
Gallia .....	13,015	19,898	34,002	31,163	49,672	52,300	60,093	57,463
Geauga .....	314,719	225,630	303,396	391,486	194,325	155,127	107,202	108,257
Greene .....	65,053	48,760	95,699	63,470	209,305	51,076	72,717	84,781
Guernsey .....	33,423	33,776	52,423	20,095	45,084	47,243	56,557	68,332
Hamilton .....	202,699	261,545	456,580	282,563	281,924	327,756	424,969	469,333
Hancock .....	80,959	52,139	117,174	116,110	95,114	68,128	58,008	185,327
Hardin .....	98,941	47,892	125,952	484,884	208,507	106,067	122,215	165,656
Harrison .....	27,647	30,256	31,475	35,286	47,117	37,227	46,098	52,911
Henry .....	87,715	64,218	98,829	85,559	113,572	92,468	53,922	129,663
Highland .....	21,882	17,477	59,551	35,152	36,499	25,585	34,909	65,851
Hocking .....	35,431	39,270	76,213	43,067	53,244	50,765	51,565	67,459
Holmes .....	82,123	54,493	114,280	103,516	74,183	50,801	66,091	111,185
Huron .....	170,493	92,644	168,806	246,964	110,475	108,279	89,474	146,475
Jackson .....	11,083	18,791	45,390	15,515	24,764	16,489	27,883	22,710
Jefferson .....	46,224	57,466	96,305	79,009	65,647	96,300	136,622	130,623
Knox .....	55,770	39,236	108,199	108,101	80,323	53,188	64,492	97,804
Lake .....	208,869	166,067	186,081	255,631	162,467	171,606	99,683	100,479
Lawrence .....	17,874	18,633	43,400	24,306	27,417	42,065	30,790	39,085
Licking .....	81,105	69,427	170,258	104,574	136,196	99,660	143,892	170,568
Logan .....	37,856	22,955	68,674	49,411	86,830	39,129	58,329	72,404
Lorain .....	234,996	178,502	210,742	370,800	181,182	151,285	123,306	163,079
Lucas .....	343,516	251,471	335,961	280,356	210,048	248,175	156,153	326,224
Madison .....	15,356	18,372	32,803	14,385	80,679	29,896	44,733	39,732
Mahoning .....	197,780	133,960	260,584	210,881	171,666	163,656	101,750	134,363
Marion .....	57,598	35,823	90,626	97,006	99,745	54,853	74,488	84,224
Medina .....	245,082	178,142	287,196	270,125	148,562	118,286	91,329	133,244
Meigs .....	54,839	52,378	92,278	55,894	86,566	81,964	117,378	100,708
Mercer .....	32,896	23,817	94,787	54,628	73,156	37,045	46,459	99,085
Miami .....	66,449	45,426	180,909	101,069	131,001	97,214	136,144	137,295
Monroe .....	85,368	81,186	77,965	37,130	94,118	104,605	121,784	116,333
Montgomery ..	93,107	58,772	189,518	93,431	118,813	89,253	120,126	171,223
Morgan .....	29,746	29,608	58,983	35,397	63,144	58,303	70,084	65,083
Morrow .....	59,178	55,672	92,307	112,076	90,431	52,973	54,297	86,052
Muskingum .....	50,667	57,078	114,463	82,136	113,779	112,867	148,913	137,706
Noble .....	40,685	35,949	45,793	26,378	48,977	63,002	77,991	70,680
Ottawa .....	36,360	33,258	50,535	58,804	34,557	29,380	24,185	51,082
Paulding .....	31,663	18,171	85,738	63,214	67,514	50,811	33,002	85,524
Perry .....	41,315	41,625	86,166	50,544	63,792	40,482	74,159	78,423
Pickaway .....	21,104	29,530	63,625	28,140	91,189	69,633	90,691	104,943
Pike .....	30,684	24,299	63,156	20,275	38,592	22,053	66,252	45,397
Portage .....	775,471	473,724	637,298	778,784	482,407	378,517	231,501	331,107
Preble .....	53,154	31,611	106,609	66,178	61,891	37,379	47,351	57,684
Putnam .....	80,482	48,615	133,975	99,537	34,341	65,535	54,797	172,016
Richland .....	225,433	113,671	237,819	253,721	158,051	88,658	104,790	161,158
Ross .....	38,398	42,483	107,610	39,823	125,347	140,307	144,341	148,980

COMPARATIVE TABLE SHOWING PRODUCTION OF POTATOES IN OHIO  
FOR EIGHT YEARS — Concluded.

Counties.	Number of Bushels.							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Sandusky ..	200,687	140,743	188,366	235,510	180,912	120,596	102,298	230,893
Scioto .....	67,273	58,848	103,940	57,618	95,255	84,796	87,898	93,924
Seneca .....	155,098	82,232	148,327	194,082	147,993	105,922	98,986	206,771
Shelby .....	41,111	25,364	109,525	57,520	70,271	33,207	49,689	82,751
Stark .....	415,661	258,558	412,341	437,378	240,987	249,616	221,361	237,907
Summit .....	349,008	215,308	287,431	316,211	207,741	160,242	139,320	192,556
Trumbull ..	351,181	207,751	453,529	493,047	290,690	242,470	194,852	202,998
Tuscarawas.	160,579	144,449	274,624	246,514	170,396	131,705	174,543	196,494
Union .....	12,844	12,092	35,317	20,972	45,110	26,809	31,692	52,296
Van Wert ..	43,550	25,393	86,270	58,120	75,175	37,387	43,321	114,448
Vinton .....	23,728	22,446	51,482	27,558	28,665	30,194	36,405	36,030
Warren .....	42,321	36,788	162,769	58,702	48,970	40,195	59,053	80,158
Washington.	109,698	108,866	117,174	78,869	150,990	163,630	201,767	198,265
Wayne .....	234,325	150,250	274,178	815,879	177,390	115,080	98,126	166,529
Williams ..	86,337	44,184	70,573	79,963	63,896	68,125	59,662	136,965
Wood .....	104,640	70,222	108,283	86,775	95,878	106,530	82,114	175,748
Wyandot ..	67,397	32,361	80,716	126,330	69,260	42,453	51,308	66,573
Total prod.	10,097,418	7,296,582	12,906,184	12,557,717	10,069,983	8,436,397	8,839,186	11,793,716
Total area	118,165	114,882	153,362	253,884	157,923	122,268	118,189	117,342

Average area for 8 years, 144,482 acres.

Average product for 8 years, 10,248,379 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF TOBACCO IN OHIO  
FOR EIGHT YEARS.

Counties.	Pounds of Tobacco.							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Adams ....	1,828,170	796,098	1,807,617	917,280	2,859,385	2,233,204	2,896,150	2,782,532
Allen .....	40	520					100	
Ashtabula .....	1,400	2,995	4,800	5,600	2,500	9,320	12,897	5,787
Ashland .....								200
Athens .....	10,300	3,700	6,010	300	8,800	5,130	20,650	9,200
Auglaize .....	30,860	4,100	7,880	6,580	16,600	23,140	16,480	11,560
Belmont .....	1,289,763	1,226,297	1,306,728	639,956	892,332	1,552,846	1,142,964	834,501
Brown .....	3,300,029	2,008,930	2,522,900	2,337,156	3,712,431	3,344,460	3,994,298	4,492,314
Butler .....	1,035,965	631,662	371,920	408,091	452,305	546,413	799,202	818,516
Carroll .....								
Champaign .....	98,080	19,100	16,474	18,400	15,850	16,600	25,805	5,000
Clark .....	251,060	150,280	121,737	14,566	145,141	153,085	34,445	135,725
Clermont .....	1,597,850	991,950	1,301,950	1,816,985	2,165,643	1,716,210	2,209,680	2,103,507
Clinton .....	102,546	23,560	76,500	16,500	33,500	4,900	26,850	51,696
Columbiana .....				60				
Coshocton .....	10				200			
Crawford .....				215				
Cuyahoga .....						550		
Darke .....	10,270,356	5,768,440	2,700,049	3,309,618	3,900,870	4,808,765	6,596,067	5,990,050
Defiance .....	6,650	3,600	3,400		2,850	2,240	2,650	4,300
Delaware .....	100						191	100
Erie .....		80	100				1,300	80
Fairfield .....		4	200	800	40	500	100	
Fayette .....	45							200
Franklin .....	20		20	10				
Fulton .....								
Gallia .....	890,582	235,955	475,400	483,643	506,253	580,471	455,725	312,905
Geauga .....		24			75			
Greene .....	492,439	190,540	79,650	128,810	214,776	131,908	183,026	275,281
Guernsey .....	240,461	218,945	252,635	99,087	185,285	161,460	166,704	165,167
Hamilton .....	108,422	106,940	174,120	44,599	211,411	226,683	145,058	178,000
Hancock .....		254		85		60		
Hardin .....								350
Harrison .....			80		4			
Henry .....	120				100	150	6,425	500
Highland .....	23,270	14,060	9,570	9,000	52,045	60,925	68,100	75,150
Hocking .....	400	120	550		250	1,200		
Holmes .....		75			300	1,000		8,675
Huron .....							2,530	
Jackson .....							65	
Jefferson .....			192				40	
Knox .....	10			50	300			
Lake .....		650	2,000	4,000	3,900		52,570	9,900
Lawrence .....	40,297	17,800	23,700	40,530	23,775			22,330
Licking .....				142				
Logan .....	66,000	15	31,048	11,755	27,750	19,500	14,000	59,075
Lorain .....				186				
Lucas .....	300		100					
Madison .....	20			600	600	50		
Mahoning .....								
Marion .....		100						
Medina .....	238,440	134,500	110,450	180,627	231,471	270,600	283,266	363,690
Meigs .....	1,900	9,330	10,025	5,000	4,050	690		
Mercer .....	18,200	1,025			6,894	1,850	7,495	3,700
Miami .....	3,056,706	1,964,420	1,126,102	903,259	1,234,815	1,488,893	2,289,255	1,479,835
Monroe .....	1,388,350	1,293,479	1,496,265	748,578	1,334,203	1,964,740	1,580,603	1,073,317
Montgomery .....	12,918,397	7,132,289	5,227,139	5,459,681	6,801,150	5,114,350	10,536,274	8,768,756
Morgan .....	101,850	60,270	153,625	93,285	283,060	377,454	275,280	231,645
Morrow .....			32			258		
Muskingum .....	15,340	3,800	9,200	2,500	4,000	8,130	4,880	639
Noble .....	1,150,675	833,680	1,321,737	601,408	1,163,432	2,534,436	1,141,891	899,572
Ottawa .....								
Paulding .....	4,000	800	620		4,020	2,775	11,420	8,500
Perry .....	7,400	1,800		3,000	220	1,285	2,350	405
Pickaway .....			40			150		
Pike .....	17,443	22,910	27,900	8,100	30,825	21,500	21,825	19,080
Portage .....	3,100	1,000	50			200	3,800	620
Preble .....	4,906,350	3,128,000	1,838,148	2,108,300	2,274,123	1,840,017	2,554,325	2,973,224
Putnam .....	597	820	70				100	
Richland .....								

**COMPARATIVE TABLE SHOWING PRODUCTION OF TOBACCO IN OHIO  
FOR EIGHT YEARS — Concluded.**

Counties.	Pounds of Tobacco.							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Ross .....			5,450	2,300	26,800	18,230	22,130	13,819
Sandusky .....								
Scioto .....	283,390	182,276	237,160	77,400	365,987	228,650	127,150	127,855
Seneca .....	600					75		
Shelby .....	165,021	37,968	17,000	10,600	85,800	47,620	66,875	89,357
Stark .....	570	4,100		950			9,700	4,441
Summit .....					2,600	5,700	5,000	6,350
Trumbull .....	75							250
Tuscarawas .....			300		200			102
Union .....			125	125	300			
Van Wert .....		25					2,500	700
Vinton .....	1,850	190	25				600	100
Warren .....	3,217,078	1,796,622	1,506,088	4,244,240	1,819,066	1,591,990	2,216,868	1,912,887
Washington .....	54,190	78,934	124,613	73,930	299,119	465,981	808,353	181,394
Wayne .....	906,021	248,315	186,825	209,490	235,112	220,750	335,765	262,645
Williams .....						3,500	2,000	
Wood .....	150							125
Wyandot .....		18						395
<b>Total prod</b>	<b>49,534,158</b>	<b>29,242,225</b>	<b>24,196,189</b>	<b>24,601,327</b>	<b>31,573,098</b>	<b>31,511,464</b>	<b>40,639,833</b>	<b>36,762,994</b>
<b>Total area</b>	<b>57,659</b>	<b>40,823</b>	<b>34,908</b>	<b>32,856</b>	<b>41,594</b>	<b>50,548</b>	<b>46,996</b>	<b>41,354</b>

Average area for 8 years, 43,303 acres.

Average product for 8 years, 33,507,661 pounds.

# COMPARATIVE TABLE SHOWING PRODUCTION OF BUCKWHEAT IN OHIO FOR EIGHT YEARS.

Counties.	Number of Bushels.							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Adams .....	99	159	48	18	4	64	98	122
Allen .....	221	188	602	41	235	246	1,285	1,508
Ashland .....	747	2,432	4,508	2,501	615	988	2,744	1,837
Ashtabula .....	65,137	56,900	71,929	59,776	49,181	35,571	38,478	27,607
Athens .....	819	1,022	4,900	280	379	236	444	748
Auglaize .....	1,951	1,234	2,017	1,222	1,412	1,442	2,605	2,633
Belmont .....	196	155	87	1,266	248	1,142	989	1,535
Brown .....	.....	56	87	.....	20	40	121	230
Butler .....	1,872	821	1,007	14	203	128	96	402
Carroll .....	809	870	3,071	2,980	651	1,233	1,343	1,444
Champaign .....	90	172	1,171	989	1,340	979	292	1,235
Clark .....	462	200	190	147	244	569	68	508
Clermont .....	148	825	231	169	58	324	217	473
Clinton .....	2,165	2,059	685	237	123	72	479	698
Columbiana .....	1,911	1,444	5,019	6,932	1,722	1,975	2,309	2,385
Coshocton .....	701	1,000	6,025	4,457	1,075	1,905	1,880	1,631
Crawford .....	84	1,000	2,241	904	1,152	923	1,484	461
Cuyahoga .....	847	1,364	315	1,276	321	81	498	198
Darke .....	1,915	2,812	2,228	820	351	198	1,502	1,781
Defiance .....	821	2,166	2,166	234	1,945	808	2,322	4,339
Delaware .....	8,482	4,588	1,426	245	4,516	1,167	1,618	1,476
Fairfield .....	676	132	11,342	4,673	4,261	3,084	6,548	5,741
Fayette .....	25	47	828	828	150	68	183	211
Franklin .....	801	1,946	356	.....	320	25	68	122
Fulton .....	5,491	2,469	.....	323	967	829	1,658	1,680
Gallia .....	119	7,208	8,119	4,300	7,408	5,722	5,888	8,782
Geauga .....	5,028	200	372	84	167	71	335	549
Greene .....	129	5,457	6,988	5,975	2,409	2,985	6,432	3,912
Guernsey .....	1,617	176	468	50	5	46	92	114
Hamilton .....	418	1,738	872	885	7,489	1,217	2,082	2,082
Hancock .....	324	60	874	90	40	494	251	251
Hardin .....	570	1,049	1,009	449	906	509	1,444	3,156
Harrison .....	3,627	658	1,330	550	1,563	922	1,480	1,840
Henry .....	197	241	1,118	983	485	315	480	689
Highland .....	2,137	8,627	8,131	28,426	2,254	1,308	2,001	2,915
Hocking .....	762	141	508	85	108	102	135	144
Holmes .....	1,856	1,127	2,830	3,623	1,303	622	1,200	1,113
Huron .....	2,254	1,032	4,256	3,727	836	943	1,970	1,633
Jackson .....	760	5,182	4,465	2,437	1,714	838	2,949	3,657
Jefferson .....	1,043	1,823	1,129	658	906	249	872	885
Lake .....	955	808	997	972	429	238	508	496
Lawrence .....	93	1,634	10,182	3,510	583	1,138	2,516	1,845
Licking .....	813	917	2,805	3,068	2,138	741	879	1,509
Logan .....	888	119	907	161	50	39	111	.....
Lorain .....	8,327	2,904	9,928	1,396	900	1,334	2,302	1,082
Madison .....	54	1,870	2,385	1,287	1,210	331	1,351	927
Mahoning .....	1,718	661	1,092	675	838	891	1,373	188
Marion .....	643	10,232	10,028	6,799	7,393	4,812	5,196	9,786
Medina .....	1,050	62	278	87	185	133	192	399
Meigs .....	321	84	.....	.....	.....	.....	.....	.....
Mercer .....	389	2,559	5,135	2,674	1,319	8,233	4,534	2,547
Miami .....	57	1,718	843	434	179	379	912	1,429
Monroe .....	4,675	825	.....	.....	.....	.....	.....	.....
Montgomery .....	146	1,226	4,489	962	873	644	861	1,169
Morgan .....	874	233	242	142	41	492	200	576
Morrow .....	1,100	321	1,909	238	296	174	4,323	1,211
Muskingum .....	597	389	261	55	26	242	837	627
Noble .....	501	57	1,918	5,475	6,688	1,134	1,423	2,256
Ottawa .....	257	20	180	190	48	129	69	98
Paulding .....	3,187	518	1,352	1,063	828	512	699	2,008
Perry .....	2,384	874	1,251	495	465	771	1,364	1,827
Pickaway .....	.....	1,049	607	480	184	412	800	616
Pike .....	1,525	597	365	732	645	279	550	876
Portage .....	6,007	501	759	530	213	13	634	927
Preble .....	151	4,401	1,700	186	693	522	4,747	3,114
Putnam .....	602	8,187	1,579	907	849	936	1,181	1,484
Richland .....	1,414	1,148	42	10	3,838	70	355	152
Ross .....	806	.....	1,402	365	794	85	868	424
.....	.....	1,525	1,402	365	794	85	868	424
.....	.....	9,237	12,327	6,778	2,573	3,578	4,435	3,985
.....	.....	54	163	12	54	105	380	518
.....	.....	1,681	1,933	614	644	192	2,160	1,159
.....	.....	1,778	3,138	2,679	734	902	2,970	618
.....	.....	272	1,398	247	708	140	154	238

**COMPARATIVE TABLE SHOWING PRODUCTION OF BUCKWHEAT IN OHIO FOR EIGHT YEARS—Concluded.**

Counties.	Number of Bushels.							
	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.
Sandusky .....	908	453	2,074	1,285	1,583	855	1,285	2,119
Seneca .....	1,445	682	1,723	1,767	1,267	161	866	1,183
Shelby .....	279	479	1,006	486	504	283	1,072	1,263
Stark .....	3,496	1,387	4,777	2,438	1,728	1,191	1,298	1,457
Summit .....	1,099	1,197	3,329	3,088	699	541	1,316	1,240
Trambull .....	937	2,027	3,761	3,100	1,087	1,101	1,129	1,492
Tuscarawas .....	16,898	15,846	24,074	13,546	8,552	5,987	12,119	7,821
Union .....	1,568	1,801	4,694	2,171	1,158	2,121	1,718	2,778
Van Wert .....	1,197	985	2,327	68	255	58	1,484	1,075
Vinton .....	1,357	2,289	795	292	710	292	3,953	2,085
Washington .....	1,846	805	1,455	1,650	656	388	835	792
Wayne .....	195	905	579	56	41	136	163	369
Williams .....	2,610	1,537	2,492	1,994	913	1,423	1,838	2,784
Wood .....	835	1,116	2,692	2,235	630	601	1,536	985
Wyandot .....	1,779	2,013	1,946	808	948	517	2,011	1,744
.....	1,381	2,323	3,032	808	980	1,762	2,974	2,764
.....	420	329	801	300	655	215	1,107	1,064
Total product ..	191,684	192,300	310,859	258,024	139,303	123,295	181,839	169,785
Total area.....	11,974	14,811	19,982	16,428	12,008	9,876	14,197	12,587

Average area for 8 years, 13,969 acres.

Average product for 8 years, 195,811 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF FLAX SEED IN OHIO  
FOR EIGHT YEARS.

Counties.	Number of bushels.							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Adams				7	1			56
Allen		17	185	108	130	207	211	252
Ashland	15,288	9,015	12,848	23,708	23,859	5,712	3,155	9,801
Ashtabula	1		502	196	71		170	534
Athens								
Auglaize	10	126		257	20		168	887
Belmont								
Brown			500		35	85		40
Butler				15		28	87	
Carroll						275		1,063
Champaign		30	60		208	384	291	871
Clark				129	5			
Clermont								
Clinton						19		
Columbiana						55		44
Coshocton					2			
Crawford	862	1,022	2,185	3,965	2,091	1,230	1,406	4,721
Cuyahoga		60	60					
Darke	85		188	10	269	843	1,111	6,842
Defiance	56		10					
Delaware			90				16	552
Eric					16			621
Fairfield							4	
Fayette		62			12	4		406
Franklin							20	
Fulton		10	122	385	176	190	60	217
Gallia		10	5					
Geauga	90	60	336	653	845	172	99	384
Greene		70	268	261				185
Guernsey	4	12	8		8	7		
Hamilton								
Hancock		92	152	63		25		676
Hardin	5		200	132	235	56	198	162
Harrison					4	1,850		14
Henry	10	54	5	38				
Highland			51					
Hocking			4			31	4	
Holmes					15			19
Huron	2,952	1,965	6,400	5,738	2,974	1,398	1,151	3,083
Jackson				2				
Jefferson			5	6	106	12	6	10
Knox			40	4			488	1,654
Lake	2,900							
Lawrence								
Licking				6			13	438
Logan			250	9	50	48	8	230
Lorain	913	1,330	2,148	1,235	600	739	174	1,927
Lucas	226	245	90	402	454	115	355	905
Madison								
Mahoning		45	487	332	345	145	302	576
Marion		779	84	40	65	948	364	1,332
Medina	5,922	4,370	7,611	8,434	6,547	4,184	7,588	17,755
Meigs				1,991		20		13
Mercer		12	33				37	612
Miami		380	275	240	624	320	1,242	3,769
Monroe	80	1	24	16	28	4		
Montgomery	6	7	43	190				
Morgan	125				180		54	1,237
Morrow				101	95			
Muskingum			95				128	2,542
No. le							15	
Ottawa							35	
Paulding		40	95	20	17	15	81	80
Perry	100				2	27		3
Pickaway								176
Pike								
Portage		404	633	796	344	249	16	1,951
Preble	327	344	232	491	907	738	1,996	5,805
Putnam	225	2				30		
Richland	11							
Ross	3,012	1,415	4,900	4,797	2,396	378	337	2,423

COMPARATIVE TABLE SHOWING PRODUCTION OF FLAX IN OHIO FOR EIGHT YEARS — Concluded.

Counties.	Number of bushels.							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Sandusky .....					37		2	100
Scioto .....			28	20				
Seneca .....	220	80	202	41	202			618
Shelby .....	120	277	111		1,166	166	585	3,378
Stark .....	2	73	20	66	13	42		
Summit .....								
Trumbull .....	319	518	1,792	3,106	2,286	744	996	4,208
Tuscarawas .....				28	7	9		15
Union .....		6					55	74
Van Wert .....		15		60	60		9	135
Vinton .....	60	2	30					
Warren .....							5	62
Washington .....		4			4			
Wayne .....	2,412	2,261	3,948	5,677	4,824	2,794	2,266	4,162
Williams .....								
Wood .....	60		150	418	360	105	20	
Wyandot .....					100			
Total product ..	36,307	25,640	47,605	67,323	48,302	23,232	25,008	87,219

Average product for 8 years, 44,442 bushels.



**COMPARATIVE TABLE SHOWING PRODUCTION OF FLAX IN OHIO FOR  
EIGHT YEARS.**

Counties.	Pounds of Fiber.							
	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.
Allen .....							9	516,500
Ashland .....	766,300	552,500	986,550	888,407	1,464,800	607,890	204,300	14,000
Ashtabula .....			8,300				2,000	27,500
Athens .....						1,000	4,000	10,000
Carroll .....							15,000	12,000
Champaign .....							16,000	87,540
Clark .....							46,000	77,100
Crawford .....	18	5	8,000	70,000				6
Darke .....					5,700			1,500
Delaware .....								86,000
Erie .....							4	
Fairfield .....								
Fayette .....	14							
Geauga .....			5,000	21,930	41,000	4,000	80,000	18,000
Greene .....				6,000				6,000
Huron .....	121,400	90,115	250,690	502,804	154,208	135,880	65,200	139,100
Knox .....	80							125
Lake .....	320							328
Lawrence .....								
Licking .....							48	
Lorain .....	16,500	59,010	41,500	45,000	21,700	18,900	6,000	72,000
Lucas .....	10			158				850
Mahoning .....			7,000	6		4,000	8,000	18,000
Marion .....							128	28,600
Medina .....	63,019	87,514	121,200	282,300	824,900	196,300	266,040	667,800
Mercer .....								6,000
Miami .....	6	84,800	22,000	3,000	21,400	20,100	54,008	228,700
Montgomery .....			100		9,000			79,104
Morrow .....						10		104
Portage .....	11,087	29,500	56,400	25,000	19,800	6,000	710	63,600
Preble .....					10,000	6,001	34,300	80,070
Putnam .....	50							
Richland .....	48,000	42,650	275,400	215,100	93,000	3,112	5,000	71,700
Sandusky .....								10,000
Seneca .....			10	435				
Shelby .....	6,000	1,608			15,000	16,820	9,500	182,900
Stark .....		4				6,000		
Trumbull .....		19,000	165,700	102,235	108,800	80,500	15,600	225,500
Wayne .....	135,370	126,600	275,900	258,560	657,800	168,100	227,130	84,900
<b>Totals .....</b>	<b>1,163,184</b>	<b>1,013,301</b>	<b>2,218,146</b>	<b>2,320,535</b>	<b>2,946,408</b>	<b>1,255,243</b>	<b>1,050,247</b>	<b>2,698,108</b>

Average product for 8 years, 1,883,197 pounds.

COMPARATIVE TABLE SHOWING PRODUCTION OF BROOM CORN IN  
OHIO FOR EIGHT YEARS.

Counties.	Pounds of broom brush.							
	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.
Adams	30	2,387	500	600	300	1,000	2,125	887
Allen	800	400	3,110	3,900	1,800		2,322	6,420
Ashland				450		1,000	1,000	22
Ashtabula							200	
Athens	100,700	162,000	90,100	248,020	175,750	121,900	34,700	30,100
Auglaize	2,000	2,320	5,008	4,320	2,468	670	2,200	
Belmont	2,714	2,068	550	3,800	2,380	825	800	1,200
Brown	7,500	13,800	33,000	20,500	24,400	37,200	36,250	66,500
Butler								
Carroll	47,500	21,650		7,600	82,550	52,000	86,332	52,900
Champaign							500	3,400
Clark				2,000	4,350	21,400	1,700	500
Clermont		1,810		400	1,000		1,585	
Clinton		800	350	247			600	450
Columbiana				30		50	2,680	
Coshocton		1,000					700	4,800
Crawford						120		
Cuyahoga	41,380	3,650	17,022	36,520	58,210	22,100	26,300	18,465
Darke		3,200	200					
Defiance	3,000				2,300	1,000	17,600	1,075
Delaware		4,000	10,600	2,000	15,000			3,000
Erie		350	145,250	801	1,100	9,700	6,900	750
Fairfield	8,000	6,000	300	4,200	18,000	9,000	12,855	26,500
Fayette	39,820	4,550	6,000	4,500	28,550	43,400	29,300	24,800
Franklin	500	1,700	2,000			1,200	1,800	2,250
Fulton	4,600		3,600		135			
Gallia			1,400					82
Geauga		500	4,000		8,000	8,200	9,900	3,000
Greene	175	800					140	
Guernsey	82		1,300	12,800	7,000	5,089	10,424	1,055
Hamilton		520	3,000				2,280	
Hancock		1,000	310	200	22,000	2,700	16,080	40,000
Hardin				100				25
Harrison	1,000	4,000	4,550					3,000
Henry	200	8,000		900	2,800	465	11,200	10,500
Highland	1,000	2,080	450	3,400	2,800	300		
Hocking	600	2,000		400	2,100			2,281
Holmes					1,200	600	900	18,000
Huron								
Jackson					2,209	510	370	
Jefferson				1,910				1,900
Knox				4,000				
Lake		3,700	2,427	3,000	1,500	800		
Lawrence	2,500	3,150	8,010	2,500	5,200	11,500		
Licking				27,000	22,600		1,400	300
Logan		3,809		2,400			800	
Lorain			5,000		1,500			150
Lucas				2,000		1,600	1,500	
Madison	60					88	300	1,000
Mahoning			5,639				75	
Marion				1,400				1,560
Medina		1,400	1,045	5,980		1,850	5,600	6,000
Meigs	80	2,100	3,000	14,200	6,000	2,300	70	
Mercer	6,000	4,000		3,625	14,500	6,300	14,000	6,130
Miami	345	25	145,400	50	100		180	
Monroe	21,500	1,400		25,600	33,000	23,970	3,150	4,640
Montgomery	1,450	810		540	35	171	240	100
Morgan					1,550		118	
Morrow		300	500	100				28
Muskingum	900	2,000		502	471		1,200	300
Noble								
Ottawa								
Paulding	400							
Perry		900			75	154		2,000
Pickaway				66,000	64,000	85,200	125,000	
Pike	1,000	2,000	300	200	2,000	1,000		800
Portage		700		200		400		
Preble	2,000	4,820	67,000	9,300	3,842	10,650	26,800	16,000
Putnam	36,000	15,000	700	500	40			
Richland	100	700	1,460		5,675	2,600		380
Ross	500	3,000			200	306	2,000	

**COMPARATIVE TABLE SHOWING PRODUCTION OF BROOM CORN IN  
OHIO FOR EIGHT YEARS.— Concluded.**

Counties.	Pounds of broom brush.							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Sandusky .....				109			1,200	1,500
Scioto .....	200	2,070	1,000	3,944			45	500
Seneca .....			700			125		
Shelby .....	4,000	4,400	7,200		99	5,100	800	1,700
Stark .....	50				800	1,000	170	116
Summit .....					1,200		45	
Trumbull .....						50		
Tuscarawas .....	2,000	8,000	3,090	1,500		130	430	
Union .....	2,000	2,500	7,850	5,600	2,354		3,700	2,000
Van Wert .....				250				1,800
Vinton .....		100			1,150		18	
Warren .....			1,000					8,754
Washington .....	600				200			
Wayne .....			50	1,755	1,105	20	22,420	1,168
Williams .....				400	1,800		450	4,500
Wood .....				1,600		160		
Wyandot .....	900						1,800	65
<b>Total product ..</b>	<b>344,166</b>	<b>317,404</b>	<b>598,971</b>	<b>548,208</b>	<b>687,248</b>	<b>497,551</b>	<b>588,474</b>	<b>386,878</b>
<b>Total area .....</b>	<b>748</b>	<b>781</b>	<b>979</b>	<b>1,088</b>	<b>1,125</b>	<b>1,582</b>	<b>1,081</b>	<b>768</b>

Average area for 8 years, 1,014 acres.

Average product for 8 years, 482,237 pounds.

COMPARATIVE TABLE SHOWING USE OF COMMERCIAL FERTILIZER  
FOR SIX YEARS.

Counties.	Pounds used during 1886.	Pounds used during 1887.	Pounds used during 1888.	Pounds used during 1889.	Pounds used during 1890.	Pounds used during 1891.
Adams .....	3,026,600	2,268,462	2,101,680	2,381,250	2,569,700	2,785,820
Allen .....	150,180	104,924	180,475	369,800	278,100	146,140
Ashland .....	2,657,880	2,085,100	1,382,978	1,751,900	1,401,600	1,163,585
Ashland .....	4,290,760	3,999,040	3,408,633	4,683,800	3,690,504	3,343,866
Athens .....	1,844,100	1,609,405	1,414,960	1,709,990	1,104,640	1,291,083
Auglaize .....	68,600	19,800	25,500	4,100	1,082,648	1,168,036
Belmont .....	1,726,742	2,140,275	1,777,607	1,622,377	1,839,765	1,481,161
Brown .....	3,640,480	1,219,577	1,098,700	1,071,600	1,86,625	120,690
Butler .....	493,840	214,100	143,250	145,450	862,648	819,830
Carroll .....	1,999,281	1,703,125	1,213,070	1,053,103	894,750	744,540
Champaign .....	1,410,980	841,820	788,630	1,354,070	246,016	178,450
Clark .....	1,034,608	646,800	396,708	578,500	295,718	975,563
Clermont .....	1,032,190	753,600	640,535	1,122,980	420,000	727,011
Clinton .....	810,263	865,048	336,560	705,230	2,183,950	2,258,595
Columbiana .....	3,399,088	3,255,009	2,763,300	2,563,700	707,186	747,825
Coshocton .....	1,461,990	1,163,030	827,454	1,290,006	3,074,950	3,743,960
Crawford .....	1,327,400	1,067,488	711,020	1,116,918	567,980	415,980
Cuyahoga .....	3,610,000	2,984,390	3,530,340	3,351,100	45,320	19,000
Darke .....	914,138	694,410	532,515	926,900	407,430	390,450
Deane .....	75,300	57,450	82,000	40,500	344,500	430,424
Delaware .....	788,100	237,456	295,000	636,080	1,394,252	1,257,080
Erie .....	903,870	674,760	683,220	630,501	406,800	316,084
Fairfield .....	2,755,650	1,885,490	1,408,600	2,503,250	273,816	278,450
Fayette .....	1,673,471	782,171	596,436	745,700	102,750	96,160
Franklin .....	296,350	200,701	232,750	621,375	1,206,476	1,045,245
Fulton .....	151,250	104,900	28,900	86,100	1,951,406	1,944,155
Gallia .....	2,341,521	2,479,983	1,750,005	1,654,000	832,620	304,800
Geauga .....	2,391,347	2,313,150	1,882,823	2,298,515	987,436	1,064,792
Greene .....	529,400	261,940	123,300	675,800		
Guernsey .....	2,136,725	1,789,000	1,402,200	1,681,506		
Hamilton .....						
Hancock .....	494,000	231,350	298,565	449,340	213,400	189,750
Hardin .....	146,900	34,850	100,200	175,900	65,400	23,700
Harrison .....	810,421	1,316,690	726,105	737,638	487,350	455,650
Henry .....	70,100	40,300	26,900	45,600	8,350	82,172
Highland .....	3,848,215	3,251,640	2,387,020	3,140,200	2,011,750	2,036,730
Hocking .....	2,356,351	2,027,708	2,002,923	1,622,515	1,402,640	1,398,065
Holmes .....	2,120,800	1,388,720	1,210,960	1,408,280	667,224	924,022
Huron .....	2,668,650	2,794,010	2,014,068	2,735,870	1,836,160	1,862,865
Jackson .....	1,857,810	1,934,568	1,464,910	2,086,300	1,469,915	1,308,380
Jefferson .....	1,422,910	1,447,120	1,221,662	1,601,339	899,400	802,790
Knox .....	2,402,450	1,867,825	1,405,140	2,110,998	2,041,318	1,334,675
Lake .....	1,117,600	550,429	681,700	966,400	1,066,800	1,025,100
Lawrence .....	415,800	206,350	211,125	162,995	85,600	124,150
Licking .....	2,297,390	1,346,860	1,104,810	2,019,290	977,150	1,125,827
Logan .....	682,200	193,890	161,300	100,200	217,750	75,300
Lorain .....	3,074,430	2,617,069	1,740,420	2,384,951	1,380,519	1,424,040
Lucas .....	147,500	81,400	118,700	192,900	178,150	138,800
Madison .....	60,600	8,000	1,000	44,000	1,000	33,600
Mahoning .....	3,673,980	3,992,184	2,965,456	4,172,897	2,543,729	2,330,422
Marion .....	267,900	81,700	90,010	114,012	16,100	22,700
Medina .....	5,267,500	4,399,200	3,257,420	4,417,645	3,062,000	3,260,937
Meigs .....	2,931,254	2,378,017	1,955,839	2,407,860	1,625,900	1,809,080
Mercer .....	102,100	68,100	8,500	26,900	5,100	7,500
Miami .....	1,810,426	606,650	672,460	661,043	397,160	367,500
Monroe .....	2,321,430	1,890,260	1,585,502	1,540,280	1,053,431	1,080,584
Montgomery .....	2,391,778	2,175,490	1,437,850	1,525,930	967,010	1,139,540
Morgan .....	2,304,923	2,370,650	1,042,650	2,432,358	1,743,561	1,531,670
Morrow .....	2,323,896	1,811,375	856,191	1,669,270	947,100	872,710
Muskingum .....	2,332,165	3,258,748	2,648,795	2,392,901	1,502,046	1,714,000
Noble .....	1,067,016	1,000,100	1,090,080	1,186,620	470,310	476,980
Ottawa .....	1,400	7,400	600	5,800	2,500	7,000
Pasading .....	14,243	1,700	4,920	5,300		5,800
Perry .....	8,650,810	8,437,350	2,751,630	3,093,918	2,115,580	2,014,200
Pickaway .....	567,913	452,700	543,050	379,500	184,044	258,200
Pike .....	2,690,680	1,817,743	1,771,050	1,522,140	1,547,080	1,431,400
Portage .....	3,451,854	3,698,352	3,206,740	3,476,300	2,778,452	2,435,954
Preston .....	4,181,015	3,406,290	3,581,750	3,943,100	3,285,450	3,079,140
Putnam .....	6,000	2,600	5,000	2,900		
Richland .....	8,341,551	2,745,480	1,748,700	2,775,207	1,285,430	1,232,380
Ross .....	2,156,360	1,385,642	1,352,850	1,008,255	1,504,360	1,008,400

COMPARATIVE TABLE SHOWING USE OF COMMERCIAL FERTILIZER  
FOR SIX YEARS—Concluded.

Counties.	Pounds used during 1898.	Pounds used during 1897.	Pounds used during 1896.	Pounds used during 1895.	Pounds used during 1894.	Pounds used during 1893.
Sandusky .....	434,100	284,400	272,035	181,226	121,850	176,750
Scioto .....	1,984,505	1,536,890	1,913,312	1,607,544	1,319,296	1,674,125
Seneca .....	2,390,500	1,900,840	1,458,330	2,623,150	969,900	1,232,880
Shelby .....	582,510	361,570	538,670	731,750	221,950	71,300
Stark .....	3,535,770	2,268,469	2,157,900	2,695,854	1,913,388	1,722,310
Summit .....	2,781,627	2,337,740	1,618,961	165,105	1,302,750	1,231,800
Trumbull .....	3,320,628	2,915,942	2,427,010	3,533,860	2,802,490	2,635,404
Tuscarawas .....	1,573,450	1,209,200	1,054,430	1,117,375	755,485	666,055
Union .....	168,250	62,900	84,050	153,900	339,600	69,700
Van Wert .....	1,000	1,600	.....	600	1,000	2,000
Vinton .....	1,964,350	1,407,600	1,294,950	1,589,939	1,152,338	1,178,276
Warren .....	870,900	562,750	892,150	837,200	653,300	706,050
Washington .....	4,617,730	3,375,175	3,294,850	4,260,500	3,025,166	2,861,420
Wayne .....	4,503,060	3,560,698	3,152,538	4,128,876	2,752,086	2,974,750
Williams .....	175,550	63,300	116,700	235,340	52,200	36,350
Wood .....	518,300	453,400	319,300	333,330	525,700	234,500
Wyandot .....	574,750	217,516	153,700	348,490	180,000	128,200
Total pounds .....	152,190,375	123,146,474	102,383,910	126,297,999	91,290,340	88,279,477
Total cost.....	\$1,543,915	\$1,481,533 05	\$1,168,657 00	\$1,529,098 00	\$1,162,961 00	\$1,180,448 00

Average number of pounds for 7 years, 96,863,089.

Average cost for 7 years, \$1,328,148.58.

## COMPARATIVE TABLE SHOWING PRODUCTION OF WOOL IN OHIO FOR EIGHT YEARS.

Counties.	Pounds shorn.							
	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.
Adams ....	49,291	39,021	37,878	60,870	65,518	60,442	61,786	58,525
Allen ....	101,433	77,012	76,141	93,728	130,117	130,849	127,009	118,725
Ashland ....	312,500	169,597	203,188	189,456	218,256	231,198	277,665	283,416
Ashtabula ..	95,031	90,381	77,075	11,799	109,793	120,659	120,206	138,622
Athens ....	244,080	196,726	215,524	292,028	361,205	371,618	447,861	448,202
Auglaize ....	58,756	49,406	53,662	68,827	85,365	65,622	71,629	63,337
Belmont ....	387,709	348,934	359,787	452,450	553,076	566,100	643,155	660,028
Brown ....	53,060	49,706	41,270	58,635	59,696	51,855	48,317	44,119
Butler ....	37,791	25,832	25,615	37,997	40,128	46,805	38,027	32,327
Carroll ....	324,576	326,937	314,233	330,926	466,152	474,380	552,210	557,814
Champaign ..	126,397	128,211	104,065	194,617	171,499	175,776	142,139	131,473
Clark ....	153,424	120,487	142,509	205,945	202,824	257,072	290,786	268,108
Clermont ....	33,582	25,554	24,311	27,456	31,110	25,183	21,067	33,892
Clinton ....	132,597	97,317	115,515	4,615	154,632	143,152	130,413	128,866
Columbiana ..	176,251	155,007	170,504	201,560	235,918	230,574	334,511	334,818
Coshocton ....	352,528	404,367	468,164	533,410	580,978	636,198	646,764	669,290
Crawford ..	220,367	199,646	201,365	220,954	223,801	230,871	248,283	271,536
Cuyahoga ....	31,232	29,773	27,188	31,680	34,233	43,295	50,068	48,876
Darke ....	38,301	28,031	24,013	36,032	49,762	40,375	42,720	27,026
Defiance ....	74,626	62,783	71,401	72,836	81,042	76,812	68,614	71,986
Delaware ....	221,301	186,144	210,081	262,103	323,385	245,051	400,871	401,933
Erle ....	63,289	59,675	65,514	75,962	75,379	102,522	104,670	130,738
Fairfield ....	91,616	56,350	58,098	81,434	132,584	144,003	109,837	160,193
Fayette ....	37,537	49,665	44,315	69,990	81,906	106,323	85,188	71,723
Franklin ....	57,571	46,748	44,271	54,448	55,823	66,803	79,084	72,306
Fulton ....	127,934	110,902	96,385	96,278	154,899	186,085	194,930	202,507
Gallia ....	72,943	76,464	61,945	74,951	90,473	86,914	87,569	77,028
Geauga ....	82,311	71,066	66,335	73,155	96,647	89,524	97,736	96,163
Greene ....	94,138	99,616	91,023	131,087	136,163	94,759	144,737	122,263
Guernsey ....	398,901	355,240	378,170	439,496	540,090	568,605	642,249	646,077
Hamilton ....	6,024	6,272	.....	6,938	8,727	11,949	11,706	10,239
Hancock ....	194,300	171,988	155,955	201,755	219,393	224,107	231,089	249,301
Hardin ....	155,790	45,158	154,248	178,476	210,119	169,343	212,230	225,179
Harrison ....	580,309	562,095	539,373	676,296	812,750	814,892	912,442	874,018
Henry ....	49,536	41,028	66,505	52,332	96,426	59,769	64,663	56,457
Highland ....	109,426	84,205	87,176	114,330	126,252	118,008	101,814	93,597
Hocking ....	56,158	38,317	97,560	102,825	141,630	135,023	157,245	162,051
Holmes ....	142,832	118,686	148,219	148,645	183,859	189,520	198,379	228,399
Huron ....	283,336	284,424	275,903	297,408	334,188	343,066	404,463	417,970
Jackson ....	41,888	44,014	61,257	65,153	70,313	62,654	62,924	58,630
Jefferson ....	314,497	310,664	290,035	354,608	432,182	431,910	484,968	513,275
Knox ....	498,445	457,119	460,255	529,881	574,310	621,218	682,696	721,905
Lake ....	24,688	32,918	38,138	38,457	46,248	39,226	58,429	59,046
Lawrence ....	11,348	10,165	11,131	12,086	20,809	16,804	11,651	12,243
Licking ....	543,343	470,768	527,657	584,445	702,301	759,898	898,405	949,480
Logan ....	176,567	237,135	155,657	200,477	250,431	299,071	280,521	274,522
Lorain ....	118,695	115,431	125,062	126,229	159,756	157,368	199,888	197,912
Lucas ....	13,416	14,290	12,426	16,651	18,961	21,881	27,436	28,327
Madison ....	150,909	164,065	144,390	189,896	213,181	265,499	253,709	304,955
Mahoning ....	132,501	133,325	145,645	218,210	224,929	226,576	215,037	255,831
Marion ....	360,904	317,326	323,133	340,669	391,407	341,066	400,799	385,277
Medina ....	180,121	170,063	159,538	192,833	217,140	210,147	318,816	273,879
Meigs ....	143,743	132,118	137,653	216,315	239,055	213,029	248,028	258,507
Mercer ....	62,504	48,832	38,049	49,194	70,037	70,029	57,053	45,170
Miami ....	20,255	19,570	19,488	21,750	28,572	31,708	36,983	30,508
Monroe ....	92,446	70,686	71,673	108,718	155,490	179,735	184,675	188,016
Montgomery ..	15,400	11,713	7,916	13,033	19,060	22,675	16,272	19,418
Morgan ....	339,635	312,424	334,887	435,234	506,300	511,130	545,866	522,977
Morrow ....	348,115	341,632	322,291	368,913	452,859	472,037	549,181	548,073
Muskingum ..	450,004	441,585	472,490	540,753	567,953	588,831	640,590	595,906
Noble ....	258,796	232,378	243,588	343,803	424,738	384,021	475,456	484,336
Ottawa ....	28,259	27,190	27,860	33,038	36,344	38,143	68,725	49,506
Paulding ....	35,192	24,015	19,153	29,651	29,368	30,021	26,821	21,062
Perry ....	143,651	131,731	156,250	196,777	224,612	204,636	249,513	267,296
Pickaway ....	35,951	38,315	45,628	71,549	.....	77	47,791	44,372
Pike ....	20,547	21,761	22,435	27,616	32,038	28,840	23,034	24,383
Portage ....	122,635	118,615	120,350	155,640	182,617	178,006	223,077	222,695
Preble ....	39,837	31,584	33,159	35,359	44,431	39,167	42,335	35,342
Putnam ....	58,571	49,383	34,845	55,330	61,903	56,546	79,307	90,578
Richland ....	218,367	164,947	163,781	215,003	230,000	251,568	232,856	239,520
Ross ....	55,115	53,111	46,679	68,542	63,811	68,232	73,606	75,040

**COMPARATIVE TABLE SHOWING PRODUCTION OF WOOL IN OHIO FOR  
EIGHT YEARS—Concluded.**

Counties.	Pounds shorn.							
	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.
Sandusky ..	83,572	85,016	65,986	105,756	117,395	84,235	107,390	136,646
Scioto .....	5,768	5,508	6,297	8,654	7,776	5,652	5,847	10,504
Seneca .....	174,341	145,419	162,462	204,117	202,496	211,600	238,177	246,735
Shelby .....	36,368	29,130	28,905	47,185	33,822	39,311	35,109	35,717
Stark .....	136,455	112,335	120,354	158,771	194,159	185,899	207,773	205,608
Summit .....	48,618	44,759	41,179	59,435	65,306	66,760	78,970	75,322
Trumbull ..	143,291	135,180	140,458	179,270	211,640	212,180	241,348	239,222
Tuscarawas.	151,658	142,789	151,808	202,310	262,672	272,365	316,990	298,704
Union .....	203,216	194,238	190,750	234,934	273,134	315,100	283,323	338,504
Van Wert ..	74,896	50,665	43,495	74,037	56,585	62,104	56,653	48,155
Vinton .....	104,481	98,716	110,548	136,158	150,964	38,360	145,997	149,013
Warren .....	70,676	59,385	61,164	69,788	63,103	82,132	69,874	63,193
Washington.	199,010	183,583	296,001	287,207	349,423	327,404	362,268	392,812
Wayne .....	133,238	116,191	107,401	136,307	153,415	155,215	170,601	156,608
Williams ...	166,295	136,522	135,849	149,616	162,474	164,650	188,565	176,524
Wood .....	75,567	102,511	84,074	97,599	86,555	117,609	120,694	120,066
Wyandot ...	286,275	352,924	368,432	375,920	406,395	346,650	412,110	402,432
<b>Total prod.</b>	<b>13,104,374</b>	<b>11,877,503</b>	<b>12,262,439</b>	<b>14,671,104</b>	<b>17,161,826</b>	<b>17,284,073</b>	<b>19,405,224</b>	<b>19,635,824</b>

Average product for 8 years, 15,675,296 pounds.

TABLE SHOWING THE NUMBER OF HORSES IN OHIO FOR TEN YEARS—INCLUDES CITIES AND RURAL DISTRICTS.

Counties.	1890.	1893.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.
Adams .....	4,508	4,485	4,670	4,827	5,011	5,705	6,081	5,701	5,640	5,705	6,081	6,081	6,081	6,081	6,081	6,081
Allen .....	8,235	8,397	8,894	9,174	9,198	9,281	10,005	10,022	9,961	9,281	10,005	10,005	10,005	10,005	10,005	10,005
Ashtabula .....	6,990	7,009	6,998	7,045	7,045	8,144	8,585	8,585	8,585	8,144	8,585	8,585	8,585	8,585	8,585	8,585
Ashland .....	9,870	9,888	10,424	10,980	11,182	11,576	12,008	12,008	11,576	11,576	12,008	12,008	12,008	12,008	12,008	12,008
Attchison .....	4,518	4,537	4,918	5,083	5,349	5,736	6,411	6,411	5,736	5,736	6,411	6,411	6,411	6,411	6,411	6,411
Aurora .....	7,809	8,101	8,648	8,883	9,171	9,098	9,616	9,616	9,391	9,098	9,616	9,616	9,616	9,616	9,616	9,616
Belmont .....	8,228	8,490	8,755	9,239	10,249	11,002	11,305	11,305	11,305	11,002	11,305	11,305	11,305	11,305	11,305	11,305
Brown .....	6,567	7,514	7,514	7,514	7,514	7,514	8,496	8,496	8,496	7,514	8,496	8,496	8,496	8,496	8,496	8,496
Butler .....	10,472	10,677	10,841	11,249	11,249	12,274	11,958	11,958	11,958	12,274	11,958	11,958	11,958	11,958	11,958	11,958
Carroll .....	4,890	4,690	4,732	5,189	5,583	6,250	6,122	6,122	6,122	6,250	6,122	6,122	6,122	6,122	6,122	6,122
Champaign .....	9,980	10,080	10,512	11,301	11,301	12,141	12,405	12,405	12,405	12,141	12,405	12,405	12,405	12,405	12,405	12,405
Clark .....	11,604	11,871	11,709	11,661	11,392	12,476	11,813	11,813	11,813	12,476	11,813	11,813	11,813	11,813	11,813	11,813
Clermont .....	6,644	6,676	7,351	7,292	7,657	8,447	8,591	8,591	8,591	8,447	8,591	8,591	8,591	8,591	8,591	8,591
Clinton .....	8,755	9,042	9,576	9,772	10,450	11,074	10,564	10,564	10,564	11,074	10,564	10,564	10,564	10,564	10,564	10,564
Columbiana .....	9,384	9,508	9,484	9,567	9,567	10,330	10,330	10,330	10,330	10,330	10,330	10,330	10,330	10,330	10,330	10,330
Coshocton .....	6,697	6,904	7,013	7,624	7,801	8,122	8,435	8,435	8,435	8,122	8,435	8,435	8,435	8,435	8,435	8,435
Crawford .....	8,232	8,537	8,374	8,403	8,631	8,631	9,349	9,349	8,743	8,631	9,349	9,349	9,349	9,349	9,349	9,349
Cuyahoga .....	18,729	18,624	19,443	19,931	18,583	19,636	20,105	19,527	19,925	19,636	20,105	20,105	20,105	20,105	20,105	20,105
Darke .....	14,562	14,590	14,373	15,051	15,700	15,681	15,158	15,598	15,760	15,681	15,158	15,158	15,158	15,158	15,158	15,158
Defiance .....	5,941	6,460	6,559	6,971	6,748	7,385	7,815	7,815	7,815	7,385	7,815	7,815	7,815	7,815	7,815	7,815
Delaware .....	7,819	7,194	7,578	8,400	9,161	10,059	10,870	10,232	9,965	10,059	10,870	10,870	10,870	10,870	10,870	10,870
Erie .....	4,789	5,285	5,553	5,600	5,994	6,104	6,126	6,126	6,115	6,104	6,126	6,126	6,126	6,126	6,126	6,126
Fairfield .....	10,019	10,117	9,562	9,807	10,583	10,654	10,354	10,655	10,714	10,654	10,354	10,354	10,354	10,354	10,354	10,354
Fayette .....	8,762	9,150	9,600	9,768	11,142	11,171	10,512	10,710	11,149	11,171	10,512	10,512	10,512	10,512	10,512	10,512
Franklin .....	14,564	14,697	15,551	15,551	15,551	17,667	17,667	20,054	18,689	17,667	17,667	17,667	17,667	17,667	17,667	17,667
Fulton .....	7,112	7,013	6,562	7,376	7,453	7,816	8,947	8,947	8,929	7,816	8,947	8,947	8,947	8,947	8,947	8,947
Gallia .....	4,992	4,682	4,998	5,315	5,673	5,731	5,900	5,900	5,904	5,731	5,900	5,900	5,900	5,900	5,900	5,900
Geauga .....	5,851	5,851	5,797	5,821	5,799	6,088	6,088	6,088	6,135	6,088	6,088	6,088	6,088	6,088	6,088	6,088
Greene .....	9,734	10,229	10,532	10,918	11,510	11,795	11,795	12,184	11,795	11,795	12,184	12,184	12,184	12,184	12,184	12,184
Guernsey .....	5,437	5,676	6,330	6,079	6,911	6,671	7,050	7,251	6,967	6,671	7,050	7,050	7,050	7,050	7,050	7,050
Hamilton .....	17,799	18,149	18,722	19,287	20,280	20,656	20,405	20,834	21,045	20,656	20,405	20,405	20,405	20,405	20,405	20,405
Hancock .....	10,200	10,514	10,612	10,918	11,405	12,179	12,312	12,869	12,134	12,179	12,869	12,869	12,869	12,869	12,869	12,869
Hardin .....	6,900	7,351	7,643	8,177	8,457	8,861	9,244	9,244	8,861	8,861	9,244	9,244	9,244	9,244	9,244	9,244
Harrison .....	4,671	4,798	4,943	5,274	5,799	6,418	6,889	6,889	6,418	6,418	6,889	6,889	6,889	6,889	6,889	6,889
Henry .....	6,678	6,451	6,653	6,891	7,167	7,312	7,608	8,017	6,974	7,312	7,608	7,608	7,608	7,608	7,608	7,608
Highland .....	8,887	8,286	8,613	9,258	9,398	10,698	10,187	10,079	10,132	10,698	10,187	10,187	10,187	10,187	10,187	10,187



TABLE SHOWING NUMBER OF HORSES IN OHIO, ETC. — Continued.

Counties.	1890.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.
Hocking .....	3,865	3,404	3,745	4,046	3,980	4,118	4,019	3,886	4,019	4,118	3,886	4,019	3,886	4,019	4,118	4,108
Holmes .....	6,861	6,491	6,808	6,490	6,972	7,428	8,065	8,065	8,065	8,065	8,065	8,065	8,065	8,065	8,065	8,349
Huron .....	3,188	8,171	8,278	8,480	8,570	9,000	9,518	9,680	9,518	9,000	9,680	9,518	9,680	9,518	9,518	9,518
Jackson .....	3,462	3,549	3,909	3,692	3,868	4,026	3,800	3,679	3,800	4,026	3,679	3,800	3,679	3,800	4,177	4,177
Jefferson .....	5,769	6,097	6,507	6,513	6,513	7,231	7,388	7,567	7,388	7,231	7,567	7,388	7,567	7,388	7,567	7,567
Knox .....	7,304	7,780	8,069	8,592	9,248	9,722	10,314	10,321	10,314	9,722	10,321	10,314	10,321	10,314	10,477	10,477
Lake .....	4,680	4,262	4,980	4,614	4,899	4,969	4,666	4,688	4,666	4,969	4,688	4,666	4,688	4,666	4,742	4,615
Lawrence .....	3,628	3,596	3,668	3,695	4,301	4,142	4,187	3,951	4,187	4,142	3,951	4,187	3,951	4,187	4,342	4,474
Licking .....	12,138	12,571	12,925	13,915	14,087	14,588	14,386	14,065	14,386	14,588	14,065	14,386	14,065	14,386	13,907	14,267
Logan .....	8,346	8,666	8,711	9,115	10,085	10,040	10,089	10,467	10,089	10,040	10,467	10,089	10,467	10,089	10,406	10,962
Lorain .....	9,097	9,099	9,521	8,699	10,268	10,727	11,187	11,505	11,187	10,727	11,505	11,187	11,505	11,187	11,332	11,588
Lucas .....	9,124	9,329	9,202	8,896	8,906	9,024	9,392	9,417	9,392	9,024	9,417	9,392	9,417	9,392	9,218	8,561
Madison .....	9,404	9,268	9,671	10,392	10,662	10,548	10,847	10,172	10,847	10,548	10,172	10,847	10,172	10,847	9,799	10,118
Mahoning .....	8,268	8,493	8,963	9,029	9,583	9,725	9,777	9,589	9,777	9,725	9,589	9,777	9,589	9,777	10,622	10,416
Marion .....	7,342	7,534	7,543	8,142	8,681	9,117	8,812	9,172	8,812	9,117	9,172	8,812	9,172	8,812	9,147	8,979
Medina .....	7,721	8,000	8,086	8,895	8,971	9,312	9,743	10,066	9,743	9,312	10,066	9,743	10,066	9,743	10,111	10,366
Meigs .....	5,804	5,245	5,407	5,679	5,955	6,323	6,390	5,989	6,390	6,323	5,989	6,390	5,989	6,390	5,847	5,966
Mercer .....	7,989	8,278	8,246	8,295	9,061	9,393	9,444	9,718	9,444	9,393	9,718	9,444	9,718	9,444	10,297	9,777
Miami .....	10,367	11,450	11,217	11,289	11,999	12,207	12,356	12,201	12,356	12,207	12,356	12,201	12,356	12,201	11,907	11,586
Monroe .....	4,764	4,965	5,171	5,965	5,777	6,341	6,292	6,801	6,292	6,341	6,801	6,292	6,801	6,292	6,110	7,080
Montgomery .....	15,759	16,757	15,797	16,143	16,833	17,294	17,353	15,904	17,353	17,294	15,904	17,353	15,904	17,353	16,650	16,841
Morgan .....	4,754	4,920	5,087	5,571	6,228	6,756	7,169	7,268	7,169	6,756	7,268	7,169	7,268	7,169	6,732	7,137
Morrow .....	7,292	7,200	7,342	7,561	8,413	8,435	8,896	9,071	8,896	8,435	9,071	8,896	9,071	8,896	9,101	8,712
Muskingum .....	9,374	9,789	10,075	10,627	11,064	11,664	12,526	11,961	12,526	11,664	11,961	12,526	11,961	12,526	11,060	11,880
Noble .....	4,188	4,188	4,532	4,696	5,220	6,452	5,800	5,840	5,800	6,452	5,840	5,800	5,840	5,800	5,725	6,210
Ottawa .....	5,295	5,255	5,353	5,433	5,498	5,604	5,953	6,042	5,953	5,604	6,042	5,953	6,042	5,953	6,065	5,839
Paulding .....	4,666	4,296	4,926	4,640	4,780	5,253	5,604	5,938	5,604	5,253	5,938	5,604	5,938	5,604	6,074	6,261
Perry .....	5,487	5,680	5,978	6,301	6,712	6,708	6,987	6,658	6,987	6,708	6,658	6,987	6,658	6,987	6,312	6,560
Pickaway .....	9,559	9,972	10,283	10,502	10,764	11,314	11,228	11,442	11,228	11,314	11,442	11,228	11,442	11,228	11,553	11,587
Pike .....	4,265	4,029	4,161	4,317	4,661	4,561	4,520	4,356	4,520	4,561	4,356	4,520	4,356	4,520	4,497	4,585
Portage .....	7,714	7,961	8,264	8,444	8,980	9,052	9,600	9,551	9,600	9,052	9,551	9,600	9,551	9,600	10,078	10,282
Preble .....	9,910	9,072	9,496	9,518	9,982	10,140	10,466	10,340	10,466	10,140	10,340	10,466	10,340	10,466	9,916	10,284
Putnam .....	8,470	8,433	8,666	8,851	9,141	9,115	9,588	8,854	9,588	9,115	8,854	9,588	8,854	9,588	9,138	10,286
Richland .....	8,698	8,671	8,715	9,090	9,474	9,991	10,097	10,678	10,097	9,991	10,678	10,097	10,678	10,097	10,548	10,969
Ross .....	10,477	10,584	11,347	12,152	12,780	12,722	12,641	12,409	12,641	12,722	12,409	12,641	12,409	12,641	12,113	12,484
Sandusky .....	8,480	8,395	8,292	9,182	9,008	9,515	9,145	9,395	9,145	9,515	9,395	9,145	9,395	9,145	9,664	9,657

Scioto .....	5,476	5,153	5,227	5,312	5,305	5,580	5,112	5,011	4,880	4,888
Seneca .....	8,971	9,088	9,505	9,588	10,008	10,477	10,511	10,706	11,632	11,510
Shelby .....	8,598	8,467	8,371	8,510	8,901	9,045	9,550	9,606	9,517	9,606
Stark .....	13,975	14,518	14,723	15,448	15,575	15,738	15,738	15,869	15,886	15,189
Summit .....	9,632	9,247	9,444	9,523	9,906	9,996	10,607	10,851	10,577	10,697
Trumbull .....	10,564	10,859	11,247	11,941	12,008	12,701	12,701	13,044	12,653	12,277
Tuscarawas .....	7,575	7,572	7,545	8,558	8,860	8,847	9,266	9,963	9,896	10,408
Union .....	7,277	7,408	7,546	7,704	8,557	8,915	9,276	9,963	9,865	10,285
Van Wert .....	7,789	8,571	8,370	8,901	8,982	9,383	9,697	9,818	9,555	9,782
Vinton .....	2,578	2,682	2,669	2,514	2,943	3,023	3,206	2,766	2,989	3,085
Warren .....	9,222	9,209	9,464	9,742	10,235	10,549	11,839	11,025	10,684	10,518
Washington .....	7,476	7,589	7,749	8,110	8,135	8,724	8,903	8,843	8,411	8,634
Wayne .....	10,888	11,115	11,163	11,217	11,685	12,233	12,512	12,974	12,932	13,593
Williams .....	6,377	6,277	6,132	6,072	7,346	7,659	8,191	8,623	9,065	9,063
Wood .....	10,868	11,731	11,640	11,159	11,107	11,514	12,349	12,851	11,955	11,959
Wyandot .....	6,971	6,962	7,227	7,216	7,641	8,092	8,330	8,499	8,741	9,850
Totals .....	704,165	717,734	735,050	750,432	795,937	834,840	842,209	848,443	841,797	846,789

TABLE SHOWING THE NUMBER OF CATTLE IN OHIO FOR TEN YEARS.

Counties.	1899.	1898.	1897.	1896.	1894.	1893.	1892.	1891.	1890.
Adams .....	9,716	9,114	7,852	8,354	7,506	10,290	11,087	11,611	13,197
Allen .....	13,640	13,224	12,845	12,151	12,388	12,540	14,123	14,738	15,155
Ashland .....	13,843	13,892	11,942	12,317	13,124	14,218	14,123	15,432	16,223
Ashtabula .....	27,473	26,726	23,961	23,555	24,704	25,783	28,490	28,925	19,704
Athens .....	12,069	11,218	9,761	9,175	10,896	14,574	14,570	13,536	13,504
Auglaize .....	14,587	13,224	12,662	13,265	14,705	13,874	14,872	15,004	16,341
Belmont .....	20,331	19,127	17,429	17,055	19,871	21,661	28,083	31,985	32,840
Brown .....	12,306	10,764	10,843	10,617	11,534	11,423	11,848	11,737	12,033
Butler .....	14,668	13,711	13,096	12,842	14,371	14,512	15,548	15,956	16,711
Carroll .....	12,785	11,814	10,961	11,067	13,438	14,326	14,778	14,732	14,099
Champaign .....	17,188	14,958	14,053	13,955	15,714	15,451	15,726	15,943	17,108
Clark .....	17,986	15,789	14,758	14,729	16,509	16,138	16,661	16,890	16,842
Clermont .....	9,500	9,081	8,950	9,624	11,097	11,000	10,855	11,990	12,642
Clinton .....	14,068	13,886	12,010	12,538	13,146	13,943	14,768	12,690	13,372
Columbiana .....	20,005	19,456	18,243	17,705	18,538	19,060	20,518	20,687	20,534
Coshocton .....	17,469	15,823	13,952	14,376	15,108	17,390	19,162	18,350	17,953
Crawford .....	16,018	15,229	14,870	14,353	14,849	13,747	15,065	16,841	16,735
Cuyahoga .....	16,142	15,768	15,642	15,293	15,835	16,225	16,965	19,670	19,128
Darke .....	22,213	20,591	19,141	19,304	21,125	21,553	22,313	22,078	24,139
Defiance .....	9,968	9,465	9,290	9,782	8,154	9,308	10,441	11,136	12,426
Delaware .....	15,929	15,766	13,710	13,238	14,179	14,904	15,155	16,016	16,713
Erie .....	6,984	7,223	7,057	6,800	6,152	7,071	7,581	7,837	8,275
Fairfield .....	19,474	17,210	16,400	16,738	19,811	19,698	20,716	20,446	21,607
Fayette .....	17,049	15,288	15,258	13,592	16,149	16,974	15,776	15,010	16,432
Franklin .....	18,427	17,657	17,459	18,972	19,414	19,982	22,119	21,328	23,276
Fulton .....	14,085	12,663	11,029	12,546	12,855	13,071	13,844	14,326	15,558
Gallia .....	11,900	10,828	8,812	9,237	10,324	12,156	13,027	13,199	14,979
Geauga .....	20,291	18,598	17,103	18,067	17,077	16,889	18,168	18,372	18,953
Greene .....	15,241	12,926	14,508	14,508	15,027	15,553	15,219	15,302	15,263
Guernsey .....	14,582	13,767	12,888	11,919	14,514	15,716	16,260	15,166	16,114
Hamilton .....	17,774	17,665	18,421	18,595	20,007	20,688	20,837	21,913	22,277
Hancock .....	20,666	19,716	18,429	18,689	18,017	18,607	19,648	20,293	22,165
Hardin .....	14,927	13,788	12,699	12,067	12,543	13,579	14,557	15,643	16,983
Harrison .....	11,984	11,467	10,842	9,944	12,225	12,673	13,119	12,982	13,640
Henry .....	12,111	11,191	11,388	11,390	10,926	10,092	12,449	12,435	13,425
Hocking .....	16,577	15,889	14,401	14,514	16,261	14,401	19,734	18,848	19,840
Jefferson .....	8,778	7,878	7,757	8,192	9,945	9,724	10,081	9,584	10,705

Holmes	17,486	15,455	13,284	12,980	16,767	16,855	17,009	18,872	16,864	16,661
Huron	14,224	13,086	12,068	12,486	12,648	12,848	13,678	15,004	16,902	16,827
Jackson	10,745	9,282	8,672	8,871	9,603	10,259	11,142	11,902	12,591	14,336
Jefferson	10,662	11,460	10,470	9,815	11,133	12,706	12,882	13,991	14,137	14,017
Knox	17,136	15,982	14,648	14,363	16,803	16,064	17,153	17,658	18,905	18,560
Lake	6,969	6,444	6,015	6,026	6,006	6,080	6,425	7,112	6,960	8,110
Lawrence	8,377	7,642	7,120	6,644	7,665	8,634	9,411	10,370	12,431	12,476
Licking	25,370	22,968	21,253	22,356	23,948	25,059	26,148	26,171	25,947	26,051
Logan	17,020	15,305	12,781	13,324	14,711	13,942	14,581	15,472	15,466	16,710
Loran	21,585	20,138	20,262	19,107	10,182	15,996	20,779	23,684	24,969	15,682
Lucas	8,588	8,189	7,819	7,813	7,665	7,546	8,013	9,445	8,841	10,347
Madison	17,468	24,308	16,448	15,490	18,912	18,379	17,854	19,080	17,672	19,888
Mahoning	16,700	15,942	14,868	14,501	15,801	17,238	16,371	17,741	18,010	17,612
Marion	15,232	13,264	12,243	11,779	12,162	12,064	12,364	13,339	13,658	14,532
Meigs	15,320	15,681	14,871	15,240	15,749	15,417	16,080	17,080	17,668	17,668
Mercer	10,778	10,280	9,159	8,912	10,888	12,021	11,568	13,899	19,173	13,168
Miami	13,265	12,465	13,465	14,025	14,812	15,777	15,184	16,243	17,891	19,076
Monroe	13,690	12,961	12,120	12,455	13,405	13,805	13,983	14,066	13,794	14,570
Montgomery	13,115	11,866	10,440	9,786	12,843	13,955	14,954	16,409	14,802	17,704
Morgan	19,444	18,376	16,048	17,048	18,618	18,567	18,274	16,385	18,141	20,011
Morrow	13,008	12,371	11,513	11,128	12,878	14,029	15,698	16,445	14,925	16,396
Muskingum	14,847	13,265	11,782	11,562	12,484	11,965	12,436	13,406	13,122	13,481
Noble	24,002	22,464	22,069	21,363	23,786	25,151	26,108	26,069	24,473	25,792
Oak	14,206	12,613	11,436	10,400	12,774	13,303	14,717	15,083	14,889	16,737
Ottawa	7,968	7,491	7,396	7,634	7,669	17,598	7,904	8,525	9,011	10,292
Paulding	5,727	4,901	5,016	5,345	4,860	5,477	5,951	7,185	8,217	11,347
Perry	14,053	13,039	11,870	12,399	13,367	14,802	14,842	15,685	14,846	14,770
Pickaway	18,678	18,244	17,210	17,737	20,047	19,803	19,853	20,439	19,448	20,301
Pike	3,623	4,549	4,565	5,131	5,499	6,268	7,220	7,307	7,838	6,314
Portage	20,181	19,529	18,076	17,033	19,634	19,851	20,176	20,925	21,824	21,855
Preble	14,281	14,672	13,189	13,330	12,806	14,374	15,165	15,122	14,373	16,959
Putnam	16,118	14,364	13,267	13,551	13,221	13,904	14,202	15,730	15,428	18,474
Richland	16,093	15,069	13,291	13,908	14,863	14,974	15,982	16,728	16,882	17,980
Ross	19,197	17,462	16,913	16,916	18,972	19,286	19,599	20,721	20,832	20,625
Sandusky	13,362	12,977	11,295	12,886	12,807	12,807	12,626	13,943	14,864	15,996
Seneca	8,868	7,664	7,678	7,963	8,227	8,693	9,549	10,209	10,931	12,161
Shelby	15,766	14,216	13,100	15,463	16,627	15,390	17,238	18,407	18,607	19,770
Stark	14,730	13,584	13,186	14,169	14,018	13,864	14,883	15,842	16,411	16,772
Summit	26,322	25,385	24,046	24,662	24,969	26,061	27,105	28,086	28,869	28,509
Tuscarawas	20,250	19,257	17,644	16,948	17,426	17,516	18,962	20,495	20,452	20,779
Trumbull	31,500	29,374	28,897	26,089	26,594	27,051	28,635	30,975	30,562	30,927
Tuscarawas	20,400	19,579	18,786	19,277	20,344	20,278	21,672	24,150	23,968	25,879

TABLE SHOWING THE NUMBER OF CATTLE IN OHIO FOR TEN YEARS—Concluded.

Counties.	1899.	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Union .....	14,014	12,540	11,182	11,069	12,963	12,754	13,142	14,178	13,818	15,174
Van Wert .....	11,278	10,684	9,413	10,522	10,919	10,852	11,253	12,824	11,090	15,881
Vinton .....	6,685	5,766	5,350	5,475	6,242	6,832	8,251	8,635	8,359	8,909
Warren .....	13,425	12,194	11,569	11,537	12,129	12,890	12,883	13,375	13,050	13,902
Washington .....	17,236	15,884	13,772	13,798	15,509	17,764	18,729	18,728	18,529	19,461
Wayne .....	24,990	22,730	20,615	20,720	21,485	21,392	22,714	24,760	23,794	24,556
Williams .....	12,461	11,259	10,122	11,009	11,020	10,845	11,032	12,165	12,888	14,029
Wood .....	17,498	14,730	15,807	14,974	15,758	15,473	15,828	16,820	17,258	18,873
Wyandot .....	13,304	11,440	11,191	10,403	10,757	10,584	10,562	11,543	13,061	13,006
Totals .....	1,351,251	1,265,664	1,174,094*	1,175,475	1,232,883	1,296,106	1,339,569	1,420,105	1,431,179	1,496,881





Scioto .....	641	681	774	787	842	913	873	880	893	946
Seneca .....	61	98	90	90	104	90	114	112	143	146
Shelby .....	81	100	86	110	121	151	135	142	171	182
Stark .....	221	227	219	256	272	450	447	408	380	445
Summit .....	105	66	94	72	90	80	151	132	139	112
Trumbull .....	159	98	57	65	68	49	89	101	104	108
Tuscarawas .....	169	112	130	185	120	142	155	196	197	215
Union .....	30	36	31	49	62	66	140	77	85	100
Van Wert .....	159	122	141	178	167	195	221	220	247	280
Vinton .....	101	105	117	146	144	178	168	187	223	241
Warren .....	408	389	383	407	475	505	505	594	604	672
Washington .....	178	171	164	133	122	188	198	233	221	250
Wayne .....	181	182	182	171	165	162	179	198	211	215
Williams .....	57	57	65	68	83	95	99	115	130	148
Wood .....	80	101	130	180	241	155	196	196	206	245
Wyandot .....	76	55	51	71	63	88	101	106	131	166
Totals .....	14,508	15,080	15,445	16,398	17,042	19,181	20,676	20,663	22,754	23,989



TABLE SHOWING THE NUMBER OF SHEEP IN OHIO FOR TEN YEARS.

Counties.	1899.	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams .....	8,784	7,997	7,421	8,583	11,420	14,311	13,601	13,974	12,894	11,742
Allen .....	19,198	17,705	14,865	16,676	22,651	28,684	28,097	28,492	24,805	24,194
Ashland .....	86,114	82,886	27,790	23,266	30,075	43,868	47,689	63,168	51,607	52,377
Ashabula .....	19,188	17,797	17,797	20,201	25,228	30,557	35,511	38,191	30,827	32,079
Athens .....	43,879	40,478	33,264	34,871	40,861	61,550	66,511	77,233	75,536	72,819
Auglaize .....	11,811	9,968	8,560	10,907	13,743	16,008	16,462	15,762	13,641	11,871
Belmont .....	76,542	72,991	60,908	62,292	99,370	107,751	117,548	123,108	124,070	115,111
Brown .....	12,315	12,225	9,579	9,611	11,910	13,249	12,326	9,613	9,613	8,377
Butler .....	10,067	7,452	5,745	7,721	10,252	12,202	11,845	11,070	9,867	7,285
Carroll .....	62,660	60,868	53,060	53,566	78,584	100,338	101,369	107,736	106,412	103,116
Champaign .....	22,419	23,573	23,322	21,431	31,666	32,268	37,396	30,743	29,729	23,771
Clark .....	28,602	27,449	26,669	27,624	28,653	43,572	48,733	46,900	44,866	46,911
Clermont .....	7,383	5,647	5,629	7,268	8,163	8,572	7,668	6,793	6,968	5,414
Clinton .....	24,606	23,474	19,616	23,751	28,848	32,587	34,234	30,028	27,643	24,169
Columbiana .....	36,622	36,705	30,962	33,974	43,214	65,475	62,745	73,718	76,639	74,238
Coshocton .....	81,871	78,932	71,824	75,850	94,376	110,136	114,600	116,852	117,590	108,422
Crawford .....	34,766	42,534	36,783	41,043	53,811	52,029	50,324	51,972	54,006	49,839
Cuyahoga .....	7,022	6,757	6,065	6,348	7,976	9,353	10,768	12,472	12,941	12,801
Darke .....	6,758	6,870	5,219	5,798	8,360	10,537	10,780	8,804	6,329	5,487
Defiance .....	14,071	13,655	10,625	12,063	14,064	15,131	15,871	16,083	15,062	14,197
Delaware .....	44,202	43,646	39,239	41,644	53,685	66,297	73,386	82,267	79,352	79,068
Erie .....	10,943	12,675	11,843	12,890	16,085	20,792	20,513	25,189	24,540	23,823
Fairfield .....	16,925	16,796	19,714	13,993	21,586	26,985	29,472	28,244	26,810	24,806
Fayette .....	14,837	13,117	11,235	13,438	20,952	23,212	27,866	23,236	21,974	18,726
Franklin .....	11,863	10,942	10,221	10,835	15,711	18,449	20,063	20,166	20,023	20,023
Fulton .....	21,644	20,276	19,440	20,478	24,754	33,613	34,843	37,666	36,334	32,364
Gallia .....	15,495	14,768	13,710	13,946	20,024	22,751	22,871	20,659	17,166	14,685
Geauga .....	14,287	14,666	14,405	18,709	19,257	24,433	23,337	25,177	23,337	21,910
Greene .....	18,189	16,860	14,547	13,342	22,963	24,519	23,711	22,794	20,208	21,066
Guernsey .....	74,067	69,766	60,583	63,868	86,468	102,881	106,234	116,843	112,171	111,961
Hamilton .....	3,590	2,986	2,032	2,690	3,299	3,657	3,694	3,386	3,133	2,543
Hancock .....	35,355	33,036	30,536	33,837	41,912	43,573	47,785	32,810	49,415	43,196
Hardin .....	33,192	32,648	30,373	30,373	43,382	46,782	46,485	49,648	51,063	46,944
Harrison .....	108,868	100,102	89,739	92,134	121,369	140,840	156,472	169,244	153,587	145,831
Henry .....	8,623	8,768	8,415	10,814	10,814	14,174	14,358	14,972	13,061	11,927
Highland .....	23,817	21,075	17,770	18,683	23,300	27,016	27,469	25,667	20,616	16,686
Hocking .....	16,215	16,673	14,016	17,769	23,332	25,436	27,706	30,534	30,689	31,333

Holmes .....	30,886	27,986	28,787	28,196	84,027	41,146	43,987	44,608	45,682	41,890
Huron .....	53,961	53,508	46,965	46,321	64,170	60,977	66,151	71,020	74,044	66,042
Jackson .....	8,617	8,965	9,031	11,827	14,769	15,363	14,857	14,825	13,800	12,673
Jefferson .....	56,998	56,636	49,054	46,273	65,203	62,986	81,968	89,104	98,963	91,490
Knock .....	90,645	84,764	73,931	76,411	108,200	117,246	128,747	138,347	159,994	119,085
Lake .....	7,481	7,877	6,795	7,914	9,690	12,415	14,115	15,511	15,922	16,771
Lawrence .....	3,109	3,128	3,257	3,619	5,081	5,856	5,846	5,483	5,974	5,401
Licking .....	98,434	92,214	81,652	95,243	115,620	137,019	147,391	157,019	158,763	161,877
Logan .....	34,405	31,871	30,074	34,237	44,530	51,541	56,680	54,610	58,763	46,084
Lorain .....	27,280	24,447	21,677	25,019	30,668	36,711	39,432	43,487	49,111	37,315
Lucas .....	3,259	3,191	2,740	2,786	4,044	5,723	6,406	6,773	6,689	6,064
Madison .....	27,555	28,991	29,596	31,854	47,704	52,487	58,510	58,617	59,372	51,645
Marion .....	29,506	29,815	25,143	26,377	37,678	45,350	45,304	46,050	51,237	44,381
Marion .....	59,518	54,174	44,750	50,085	56,109	64,532	70,410	73,799	82,968	69,701
Medina .....	32,743	32,415	30,119	32,606	40,884	49,850	53,584	55,001	59,169	62,440
Meigs .....	30,244	28,357	29,956	27,775	38,968	45,853	43,958	48,303	45,109	43,087
Mercer .....	13,977	11,960	9,419	9,089	12,222	13,981	14,576	12,045	10,262	8,684
Miami .....	4,871	4,902	5,235	4,470	7,747	7,987	7,680	7,680	6,888	5,868
Monroe .....	17,826	16,441	12,596	14,230	25,338	35,320	36,908	39,136	36,469	37,173
Montgomery .....	3,068	3,123	2,695	3,535	5,194	6,043	6,689	4,004	4,004	3,900
Morgan .....	65,214	59,079	51,786	54,892	72,090	89,610	92,393	98,151	92,196	89,465
Morrow .....	68,701	60,862	53,120	54,854	73,902	84,804	90,392	97,310	95,045	96,349
Muskingum .....	88,069	88,539	75,336	82,945	105,392	120,122	125,656	129,360	122,962	120,523
Noble .....	53,167	46,822	41,233	40,047	61,070	75,838	75,253	80,546	78,737	78,610
Ottawa .....	5,295	5,148	4,822	6,014	7,977	9,641	13,388	11,570	11,729	11,106
Paulding .....	6,929	6,034	4,559	5,242	6,726	6,840	7,634	6,732	5,867	6,694
Perry .....	27,497	25,617	24,339	27,715	37,022	44,694	45,777	51,433	50,122	43,246
Pickaway .....	9,994	9,471	8,777	9,960	13,615	15,015	16,213	12,588	13,237	11,890
Pike .....	4,991	3,890	3,996	5,909	7,969	7,407	6,888	6,614	6,860	5,971
Portage .....	25,406	26,989	23,807	25,332	33,562	42,274	44,798	48,944	49,736	44,440
Pueblo .....	7,702	7,190	5,741	7,144	9,042	10,376	9,660	9,013	7,859	6,783
Putnam .....	12,452	10,384	8,759	10,230	13,133	15,130	15,721	16,037	14,239	12,445
Richland .....	42,352	39,912	32,942	34,296	47,051	54,017	57,122	60,048	59,243	56,372
Ross .....	12,254	12,277	11,287	11,387	17,886	20,319	21,068	20,775	18,568	14,412
Sandusky .....	17,294	19,095	14,014	16,783	20,375	24,817	26,377	25,043	27,610	25,080
Scioto .....	1,762	1,814	1,727	2,341	2,973	2,928	2,651	2,377	2,441	2,645
Seneca .....	33,581	32,726	30,827	32,004	39,655	43,258	46,862	46,310	52,611	48,270
Shelby .....	8,885	7,237	6,172	6,514	8,414	9,406	9,444	8,749	4,877	7,041
Stark .....	25,690	26,230	23,453	26,215	33,802	41,081	42,239	43,862	45,369	40,613
Summit .....	9,626	9,996	8,871	9,935	13,442	16,708	18,692	21,968	22,602	20,341
Trumbull .....	29,016	29,868	26,922	30,041	40,339	49,181	50,412	56,110	52,792	50,102
Tuscarawas .....	33,901	32,639	28,681	32,781	46,206	57,325	58,767	67,186	66,070	63,923

TABLE SHOWING THE NUMBER OF SHEEP IN OHIO FOR TEN YEARS—Concluded.

Counties.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.
Union .....	42,011	43,316	36,150	37,395	53,698	56,814	60,277	63,792	58,905	57,733	57,733	57,733
Van Wert .....	14,068	13,238	9,272	10,595	13,045	14,667	14,900	13,901	12,190	11,705	11,705	11,705
Vinton .....	18,280	19,067	18,152	23,430	27,799	30,335	30,564	30,680	30,054	31,868	31,868	31,868
Warren .....	12,965	11,995	11,577	14,408	16,298	18,720	18,015	16,802	13,712	12,457	12,457	12,457
Washington .....	40,706	37,824	32,361	38,472	52,576	66,987	66,880	67,143	66,213	65,566	65,566	65,566
Wayne .....	26,481	25,571	21,573	22,523	29,808	35,454	35,897	36,177	36,047	31,802	31,802	31,802
Williams .....	28,043	24,466	21,521	22,376	26,680	30,746	32,818	33,523	36,073	33,413	33,413	33,413
Wood .....	17,745	17,439	19,478	20,374	24,816	30,753	31,517	30,490	29,436	24,592	24,592	24,592
Wyandot .....	59,946	56,245	56,475	59,462	68,020	75,078	81,064	80,813	82,925	81,004	81,004	81,004
Totals .....	2,512,761	2,404,558	2,123,624	2,253,696	3,004,636	3,555,182	3,720,542	3,857,610	3,796,695	3,594,804	3,594,804	3,594,804

TABLE SHOWING THE NUMBER OF HOGS IN OHIO FOR TEN YEARS.

Counties.	1890.	1893.	1897.	1900.	1903.	1904.	1908.	1909.	1910.
Adams .....	12,243	14,872	10,008	11,600	10,501	9,362	9,491	9,496	18,125
Allen .....	23,517	28,088	20,362	25,017	21,037	20,961	17,658	16,243	28,688
Ashtabhd .....	17,814	20,348	16,419	14,961	13,027	12,450	11,788	13,245	17,880
Ashtabula .....	4,084	6,072	5,547	6,968	6,968	4,200	3,723	4,254	4,948
Athens .....	3,887	4,900	4,715	4,860	4,625	4,277	4,086	3,687	6,083
Auglaize .....	25,107	28,210	22,982	22,524	22,433	20,237	17,947	18,018	24,494
Belmont .....	11,944	14,551	12,270	10,375	12,560	12,197	10,653	11,792	14,676
Brown .....	25,106	28,567	22,370	21,867	16,068	16,380	16,971	17,104	18,562
Butler .....	31,104	25,868	19,268	18,642	19,947	18,915	17,114	18,681	26,902
Carroll .....	9,805	10,142	10,189	8,216	9,423	8,514	8,221	8,209	11,006
Champaign .....	27,708	24,406	25,025	22,837	25,728	22,708	18,841	15,745	33,027
Clark .....	26,796	23,444	22,047	21,225	23,728	20,237	16,711	17,874	24,589
Clermont .....	17,046	20,941	16,641	14,507	13,024	13,062	13,091	12,230	14,971
Clinton .....	33,208	27,667	32,183	29,279	25,724	27,886	30,437	29,865	34,742
Columbiana .....	11,611	12,920	11,433	11,175	11,711	11,000	10,628	10,668	14,160
Coahocton .....	15,865	17,151	15,686	13,307	14,680	11,857	11,746	11,680	17,068
Crawford .....	27,061	34,786	32,599	27,192	25,244	21,642	18,559	20,304	15,109
Cuyahoga .....	2,176	2,667	2,662	3,160	2,728	2,417	1,775	1,953	3,439
Darke .....	13,979	42,210	24,423	23,095	31,446	27,023	24,717	25,208	31,508
Defiance .....	13,800	16,288	11,411	14,229	12,100	10,021	8,374	10,121	14,196
Delaware .....	23,346	26,111	21,128	18,517	20,189	15,773	13,077	14,963	20,665
Erte .....	4,021	8,206	9,023	8,471	7,468	6,764	5,400	6,104	8,727
Fairfield .....	38,006	41,264	30,043	26,493	28,287	28,392	25,183	26,409	30,307
Fayette .....	32,067	31,860	31,705	33,860	27,504	32,039	23,940	29,039	37,624
Franklin .....	26,276	22,639	22,639	22,814	26,376	23,546	21,060	23,643	30,405
Fulton .....	17,321	21,651	17,800	19,783	18,250	14,027	12,147	13,084	17,977
Gallia .....	7,387	9,020	7,480	7,678	7,548	6,988	6,387	7,543	8,555
Geauga .....	4,104	4,781	4,076	4,322	3,763	3,073	2,466	3,110	3,869
Greene .....	29,760	33,466	21,660	22,009	25,650	24,064	21,429	23,210	32,569
Guernsey .....	7,028	9,680	9,100	7,376	9,053	7,213	6,874	7,428	8,916
Hamilton .....	12,089	11,884	10,800	10,278	11,398	11,239	9,116	11,606	14,095
Hancock .....	27,999	20,747	31,991	31,991	24,143	26,924	25,924	26,728	38,532
Hardin .....	25,070	31,491	24,793	22,737	23,395	20,019	14,925	14,039	22,025
Harrison .....	6,160	7,148	6,180	6,773	6,801	6,633	6,801	6,559	8,150
Henry .....	18,298	17,240	16,775	15,923	18,013	15,208	10,797	13,106	13,931
Highland .....	33,637	27,627	29,757	31,142	26,711	25,303	26,347	26,510	30,839
Hocking .....	5,967	6,867	6,109	6,647	6,114	6,657	4,886	4,955	7,751

TABLE SHOWING THE NUMBER OF HOGS IN OHIO FOR TEN YEARS — Concluded.

Counties.	1890.	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Holmes .....	20,049	22,716	20,348	16,146	18,291	16,586	15,540	15,760	21,005	23,680
Huron .....	13,051	15,701	13,020	12,358	12,015	9,923	8,280	9,100	14,373	16,230
Jackson .....	4,542	5,411	4,600	4,613	4,446	4,086	3,726	3,909	4,671	7,559
Jefferson .....	6,386	8,488	8,062	6,664	7,364	7,322	6,866	6,918	8,467	9,477
Knox .....	21,351	25,911	23,111	18,344	19,121	15,956	13,966	14,420	19,100	22,213
Lake .....	1,806	1,840	1,774	1,955	1,612	1,386	1,158	1,244	1,625	2,153
Lawrence .....	4,947	5,478	4,791	4,651	5,116	4,842	4,195	5,193	7,605	8,462
Licking .....	34,194	38,247	30,425	26,500	29,054	24,861	20,910	21,377	26,396	31,414
Logan .....	26,705	31,315	23,835	20,246	21,919	15,084	15,084	14,727	25,903	30,359
Loran .....	7,799	8,965	7,893	8,128	8,372	6,695	5,597	6,856	9,505	11,526
Lucas .....	7,390	9,109	7,688	6,054	7,646	5,988	5,424	5,797	7,654	10,370
Madison .....	34,548	39,594	32,549	26,147	30,443	30,250	26,765	24,061	31,883	41,133
Mahoning .....	7,747	9,067	8,373	7,507	8,227	7,407	6,413	6,680	8,351	10,155
Marion .....	21,406	26,489	23,395	21,786	25,192	19,666	17,333	18,386	21,974	26,996
Medina .....	9,067	11,101	9,479	8,982	9,278	7,136	6,482	6,502	8,465	10,899
Meigs .....	4,733	5,392	5,205	4,795	5,564	4,766	4,895	5,312	6,389	8,136
Mercer .....	27,633	31,420	26,462	27,213	28,391	25,420	22,761	23,442	32,338	31,197
Miami .....	19,122	21,260	14,318	15,631	15,487	14,160	12,097	18,746	18,405	20,750
Monroe .....	5,460	7,119	6,605	5,344	6,490	6,443	6,439	7,358	7,807	12,015
Montgomery .....	21,963	23,371	17,230	20,618	20,873	19,402	15,972	16,286	21,916	25,482
Morgan .....	5,272	7,440	6,525	5,974	7,379	6,234	6,061	6,556	7,344	11,132
Morrow .....	16,239	18,806	16,357	13,457	12,943	10,203	9,052	10,289	13,017	15,551
Muskingum .....	13,518	16,037	14,817	13,390	14,379	13,148	11,776	11,681	13,211	18,378
Noble .....	7,743	10,191	8,684	7,417	8,047	7,467	6,986	7,306	9,296	13,388
Ottawa .....	9,385	10,917	10,492	9,835	9,759	8,942	7,246	8,292	10,094	20,178
Paulding .....	8,302	10,049	8,009	10,498	8,866	6,439	5,331	6,581	10,964	12,044
Perry .....	10,662	12,267	9,269	9,266	10,002	7,642	7,736	7,546	9,605	10,874
Pickaway .....	29,475	30,028	20,297	27,742	30,124	27,355	23,348	23,690	29,121	37,020
Pike .....	7,417	8,877	6,690	6,898	7,767	6,173	6,588	6,504	8,677	10,690
Portage .....	7,614	8,075	7,409	7,321	7,809	6,774	5,674	6,170	7,291	9,462
Preble .....	31,055	33,963	21,968	23,890	25,837	22,254	21,198	22,355	26,040	27,890
Putnam .....	34,399	35,755	31,582	33,347	33,019	26,580	22,488	23,997	25,254	38,101
Richland .....	21,345	25,056	21,619	20,097	19,459	17,584	15,248	16,381	21,251	26,349
Ross .....	24,136	36,406	31,679	24,892	27,029	26,076	22,680	24,107	29,708	36,568
Sandusky .....	22,541	23,559	23,255	23,233	23,245	20,253	16,243	19,240	26,136	33,143

Scioto .....	8,847	7,877	6,992	8,989	7,400	6,527	6,999	6,195	7,400	9,548
Seneca .....	94,483	40,672	94,654	98,435	31,313	27,634	21,215	25,069	32,048	95,953
Shelby .....	20,482	26,236	20,320	18,974	13,114	14,988	15,516	18,047	22,793	29,843
Stark .....	22,606	26,941	24,276	22,611	22,489	29,985	16,247	22,380	23,310	31,951
Summit .....	9,294	11,066	9,669	9,025	9,231	8,121	7,604	8,371	10,380	12,117
Trumbull .....	6,579	6,953	6,568	7,800	4,963	5,453	4,832	5,064	6,705	8,571
Tuscarawas .....	13,477	17,004	16,729	14,569	14,188	13,488	12,896	18,968	16,199	20,065
Union .....	25,032	28,953	21,977	21,239	23,949	30,689	30,587	30,453	29,889	34,013
Van Wert .....	22,973	24,933	16,898	22,499	24,572	21,173	17,899	20,499	25,080	34,530
Vinton .....	3,368	3,324	3,324	3,254	2,960	2,893	2,617	2,441	3,462	4,267
Warren .....	29,562	28,459	18,649	16,626	20,135	18,611	17,861	20,587	26,035	22,940
Washington .....	7,668	9,808	7,953	7,739	8,767	8,301	8,295	8,457	10,034	13,218
Wayne .....	27,256	31,680	27,454	22,709	22,514	20,307	18,667	21,032	25,827	31,476
Williams .....	16,949	19,863	17,861	19,136	17,134	13,314	10,721	12,846	15,023	23,638
Wood .....	34,053	37,612	29,694	26,397	25,162	30,633	17,065	19,666	23,242	34,236
Wyandot .....	25,573	27,400	26,135	23,678	23,930	13,754	14,977	16,535	23,079	23,735
Totals .....	1,549,553	1,794,014	1,455,247	1,407,758	1,437,450	1,331,169	1,139,551	1,205,238	1,562,065	1,891,769



# OHIO STATE FAIR

—AND—

## INDUSTRIAL EXPOSITION.

Columbus, September 4, 5, 6, 7, 8, 1899.

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### BULLETIN OF ENTRIES AND AWARDS.

The Ohio State Fair and Industrial Exposition of 1899 fully sustained the reputation of the State for being a leader in agricultural and mechanical expansion. The completeness of the exposition in all departments, the well-arranged and well-classified exhibits, and the full and general representation of all the industries that form the basis and stability of our progress, testified more clearly than language can express the position and importance of Ohio among the States of the Nation and the producers of the world.

It is no exaggeration to say that every step of the Ohio State Fair has been forward, keeping pace with the times and the demands, in the interest of education and enlightenment and the production of wealth to the State and her progressive citizenship.

The magnificent new buildings for the exhibition of cattle, sheep, swine and poultry met the highest expectations of exhibitors and the most favorable comment on the part of farmers and others interested in the improved breeds of live stock. The great conveniences afforded for exhibition and examination were a pleasure to all. The Board hopes to be able the coming year to provide an improved exposition building for horses, an auditorium for meeting and entertainment purposes and some other needed additions and improvements, comporting with Ohio's greatness and her rank in the progressive world.

The State Board of Agriculture submits with pride its work for 1899. The impressions of the fair have gone forth for good, and renewed energy and higher aims in production can but result from the many lessons presented.

This Bulletin contains a list of entries and awards in the live stock departments, the awards in all other competitive departments and also a list of exhibitors and exhibits in departments where no competition was entered into, all of which is

Respectfully submitted,

W. W. MILLER, *Secretary.*

J. W. FLEMING, *Assistant Secretary.*



# ENTRIES AND AWARDS

## IN

### LIVE STOCK DEPARTMENTS.

HORSES—C. BORDWELL, Member in Charge.

#### THOROUGHBREDS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 Years Old or Over.			
E. Hickey, Claylick, O.....	King .....	First....	\$20 00
Stallion 3 Years Old and Under 4.			
E. Hickey, Claylick, O.....	Longfellow .....	First....	20 00
Mare 4 Years Old or Over.			
Chas. Talbot, Columbus, O.....	.....	First....	15 00
E. Hickey, Claylick, O.....	Bonnie Maid .....	Second..	10 00
G. W. O'Harra, Alton, O.....	Perdida .....		
Booth & Leist, Columbus, O.....	Slumber .....		
Filly 1 Year Old and Under 2.			
Booth & Leist, Columbus, O.....	Catea .....	First....	10 00
Filly Colt.			
Booth & Leist, Columbus, O.....	Eltosena .....	First....	5 00
Booth & Leist, Columbus, O.....	Ripas .....	Second..	3 00

#### SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Mare with 2 of Her Progeny.			
Booth & Leist, Columbus, O.....	Aunt Kate and 2 colts....	First....	\$20 00
E. Hickey, Claylick, O.....	Bonnie Maid and progeny.....		

HARRY J. PERRY, Expert Judge.

## ROADSTERS — STANDARD BRED.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 Years Old or Over.			
H. J. Jameson, Delaware, O.....	Hespernis .....	First....	20 00
A. J. Wyscarver, Newark, O.....	Sunland Clay .....	Second..	10 00
S. H. Turner, Columbus, O.....	Esparta Rex, by Peidmont .....		
J. A. Hall, Columbus, O.....	Geo. T. Putney .....		
Scioto Valley Stock Farm, Ashville, O.....	Lord Thomas .....		
Theo. Shallenberger, Amanda, O.....	Fairfield Boy .....		
C. H. Surface, Waynesville, O.....	C. H. Purcell .....		
J. W. Townsley, Jamestown, O.....	Royalwood .....		
Stallion 3 Years Old and Under 4.			
H. J. Booth, Columbus, O.....	Montessor .....	First....	20 00
Stallion 2 Years Old and Under 3.			
Scioto Valley Stock Farm, Ashville, O.....	The Janitor .....	First....	10 00
M. A. Green, Johnstown, O.....	Reuben Tell .....	Second..	5 00
Stallion 1 Year Old and Under 2.			
D. M. Bell, Leonardsburg, O.....		First....	10 00
M. A. Green, Johnstown, O.....	Johnstown Boy .....	Second..	5 00
A. E. Woodruff, Columbus, O.....			
C. H. Hartsock, Cardington, O.....			
Stallion Colt.			
Seymore Smith, Pataskala, O.....	Red Clay.....	First....	5 00
E. S. McClellan, Kennard, O.....		Second..	3 00
M. A. Green, Johnstown, O.....	Pray Tell.....		
Chas. Hartsock, Cardington, O.....			
C. A. Richey, Columbus, O.....			
Mare 4 Years Old or Over.			
V. C. Kellar, Newark, O.....	Lady Lillian.....	First....	15 00
M. A. Green, Johnstown, O.....	Can't Tell.....	Second..	10 00
S. H. Turner, Columbus, O.....			
E. S. McClellan, Kennard, O.....			
Seymour Smith, Pataskala, O.....	Lucy Walnut.....		
Seymour Smith, Pataskala, O.....	Ollie Churchhill.....		
Mare 3 Years Old and Under 4.			
S. D. Hallock, Columbus, O.....	Rexina .....	First....	10 00
Mare 2 Years Old and Under 3.			
S. M. Lyon, Columbus, O.....	Kittie L.....	First....	10 00
Wm. Gault, Columbus, O.....	Velvet .....	Second..	5 00
Seymour Smith, Pataskala, O.....	Dora Heirloom.....		
Filly 1 Year Old and Under 2.			
E. S. McClellan, Kennard, O.....		First....	10 00
Filly Colt.			
Seymour Smith, Pataskala, O.....	Jennie Clay.....	First....	5 00
E. S. McClellan, Columbus, O.....		Second..	3 00

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion with 4 of His Colts.			
S. H. Turner, Columbus, O.....	Esparta Rex.....	First....	\$25 00
C. H. Surface, Waynesville, O.....	C. H. Purcell.....		
Mare with 2 of Her Progeny.			
M. A. Green, Johnstown, O.....		First....	20 00
Chas. Hartsock, Cardington, O.....	Neat Work.....		
E. S. McClellan, Kennard, O.....			
Seymour Smith, Pataskala, O.....	Mare and colts.....		

## ROADSTERS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 Years Old or Over.			
J. A. Hall, Columbus, O.....	Chicago Prince.....	First....	20 00
D. M. Bell, Leonardsburg, O.....		Second..	10 00
D. D. B. Cliffs, Marion, O.....	Monitor Wilkes.....		
C. H. Surface, Waynesville, O.....	Furace III.....		
C. H. Surface, Waynesville, O.....			
Stallion 3 Years Old and Under 4.			
A. B. Grove, Newark, O.....	Almerion.....	First....	20 00
C. H. Surface, Waynesville, O.....		Second..	10 00
E. L. McClellan, Columbus, O.....	Earl Mack.....		
Stallion 2 Years Old and Under 3.			
R. H. Saxton, Granville, O.....		First....	10 00
C. H. Surface, Waynesville, O.....		Second..	5 00
H. L. Eckels, Cardington, O.....	Dick Bashford.....		
J. S. Wolf, Reynoldsburg, O.....	Cap Wilton.....		
Stallion 1 Year Old and Under 2.			
A. E. Woodruff, Columbus, O.....		First....	10 00
Stallion Colt.			
P. E. Elliott, Alton, O.....		First....	5 00
P. J. Schaff, Troyton, O.....	David.....		
Mare 4 Years Old or Over.			
R. H. Saxton, Granville, O.....		First....	15 00
C. H. Surface, Waynesville, O.....		Second..	10 00
Paul W. Stephens, Delaware, O.....	Roman.....		
F. E. Powell, Jr., Columbus, O.....	Wilksonia.....		
D. M. Bell, Leonardsburg, O.....			
Seymour Smith, Pataskala, O.....	Nellie Blitzen.....		
Seymour Smith, Pataskala, O.....	Flora.....		
Mare 3 Years Old and Under 4.			
C. H. Surface, Waynesville, O.....		First....	10 00
J. S. Van Ness, Mechanicsburg, O.....	Mayme.....	Second..	5 00
J. A. Hall, Columbus, O.....	Little Bridget.....		
Mare 2 Years Old and Under 3.			
D. M. Bell, Leonardsburg, O.....		First....	10 00
J. L. Grove, Newark, O.....	Aralite.....	Second..	5 00
Geo. Garlinghouse, Johnstown, O.....			
A. Thrall, Delaware, O.....	Elsie.....		

## ROADSTERS — Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Filly 1 Year Old and Under 2.			
C. Eubanks, Westerville, O.....	Julia .....	First....	10 00
G. J. Fleming, Stantontown, O.....	Allie .....	Second..	5 00
Filly Colt.			
G. W. Hiskett & Son, Fulton, O.....	Filly Colt.....	First....	5 00
Seymour Smith, Pataskala, O.....	Leone .....	Second..	3 00
G. T. Fleming, Stantontown, O.....	Genevive .....		

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion with 4 of His Colts.			
D. M. Bell, Leonardsburg, O.....	.....	First....	\$25 00
Mare with 2 of Her Progeny.			
R. H. Saxton, Granville, O.....	Starlight and colts.....	First....	20 00
G. W. Hiskett & Son, Fulton, O.....	Dolly .....		
G. T. Fleming, Stantontown, O.....	Belle Patchen and 2 colts..		
Pacing Horse, Mare or Gelding.			
F. E. Powell, Jr., Columbus, O.....	Mugwump .....	First....	20 00
S. H. Turner, Columbus, O.....	.....	Second..	10 00
D. M. Bell, Leonardsburg, O.....	.....		

C. M. JOHNSON, Expert Judge.

## FRENCH COACH HORSES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 Years Old or Over.			
McLaughlin Bros., Columbus, O.....	Quiyive .....	First....	\$20 00
McLaughlin Bros., Columbus, O.....	Rafale .....	Second..	10 00
Stallion 3 Years Old and Under 4.			
McLaughlin Bros., Columbus, O.....	Santine .....	First....	20 00
McLaughlin Bros., Columbus, O.....	Serge .....	Second..	10 00
McLaughlin Bros., Columbus, O.....	Serviro .....		
McLaughlin Bros., Columbus, O.....	Solide .....		

C. M. JOHNSON, Expert Judge.

## AGRICULTURAL REPORT.

## GERMAN COACH HORSES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 Years Old or Over.			
C. H. Surface, Waynesville, O.....	.....	First....	\$20 00.
C. M. JOHNSON, Expert Judge.			

## CLEVELAND BAYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 3 Years Old and Under 4.			
C. H. Surface, Waynesville, O.....	.....	First....	\$20 00.
Mare 2 Years Old and Under 8.			
Ohio State University, Columbus, O.....	.....	First....	10 00.
Filly 1 Year Old and Under 2.			
Ohio State University, Columbus, O.....	.....	First....	10 00.
C. M. JOHNSON, Expert Judge.			

## HACKNEYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 3 Years Old and Under 4.			
McLaughlin Bros., Columbus, O.....	Sterling .....	First....	\$20 00.
C. M. JOHNSON, Expert Judge.			

## FRENCH DRAFT.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 Years Old or Over.			
McLaughlin Bros., Columbus, O.....	Charlatan .....	First....	\$20 00
Same .....	Nero .....	Second..	10 00
Same .....	Ormeau .....		
Same .....	Vidvey .....		
Same .....	Ignace .....		
Same .....	Splendid .....		
Same .....	Rameur .....		
Same .....	Henry .....		
Theo. Shallenberger, Amanda, O.....	Madison .....		
Joseph Krumm, Truro, O.....	Prince Henry.....		
Stallion 3 Years Old and Under 4.			
McLaughlin Bros., Columbus, O.....	Mercure .....	First....	20 00
Same .....	Roublard .....	Second..	10 00
Same .....	Nicaise .....		
Same .....	Sylvio .....		
Same .....	Alpiso .....		
Same .....	Saviniew .....		
Same .....	Bill .....		
Same .....	Felix Faure.....		
Bogen Bros., Marion, O.....	Dallas .....		
Stallion 2 Years Old and Under 3.			
McLaughlin Bros., Columbus, O.....	Algerian .....	First....	10 00
John Yost, Thornville, O.....	Wamba .....	Second..	5 00
McLaughlin Bros., Columbus, O.....	Cresno .....		
Same .....	Rivedor .....		
Same .....	St. Louis .....		
Same .....	Bob .....		
Same .....	Bruce .....		
Same .....	Alpin .....		
Same .....	Akbar .....		
Jones Bros., Plain City, O.....			
Stallion 1 Year Old and Under 2.			
McLaughlin Bros., Columbus, O.....	Bel Etoile .....	First....	10 00
Orla Ross, West Berlin, O.....	Williard .....	Second..	5 00
Geo. H. Riley, Stantontown, O.....	Tumbo II.....		
Stallion Colt.			
P. J. Schaaf, Troyton, O.....	Franklin .....	First....	\$5 00
Mare 4 Years Old or Over.			
John Yost, Thornville, O.....	Delorine .....	First....	15 00
P. J. Schaaf, Troyton, O.....	Daisy .....	Second..	10 00
John Yost, Thornville, O.....	Zoe .....		
Jones Bros., Plain City, O.....	Patti .....		
Mare 3 Years Old and Under 4.			
John Yost, Thornville, O.....	Dido V.....	First....	10 00
Jones Bros., Plain City, O.....	Ruth .....	Second..	5 00
Mare 2 Years Old and Under 3.			
Geo. H. Riley, Stantontown, O.....	Duchess .....	First....	10 00
John Yost, Thornville, O.....	Estella .....	Second..	5 00
E. P. Roloson, West Berlin, O.,.....	Topsy .....		
Filly Colt.			
Geo. H. Riley, Stantontown, O.....	Lady .....	First....	5 00

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Mare with 2 of Her Progeny.			
Geo. H. Riley, Stantontown, O.....	Prudence .....	First....	\$20 00

H. GERMAN, JR., Expert Judge.

## CLYDESDALES AND SHIRES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 Years Old or Over.			
Shire Breeding Farm, London, O.....	Conqueror .....	First....	\$20 00
Stallion 3 Years Old and Under 4			
Shire Breeding Farm, London, O.....	Mt. Sowell .....	First....	20 00
Stallion 1 Year Old and Under 2.			
Shire Breeding Farm, London, O.....	Sampson .....	First....	10 00
Stallion Colt.			
Shire Breeding Farm, London, O.....	Slygh .....	First....	5 00
Mare 4 Years Old or Over.			
Shire Breeding Farm, London, O.....	Trojan Bell.....	First....	15 00
Mare 3 Years Old and Under 4			
Shire Breeding Farm, London, O.....	Black Bess.....	First....	10 00
Mare 2 Years Old and Under 3.			
Shire Breeding Farm, London, O.....	Mabel .....	First....	10 00
Filly 1 Year Old and Under 2.			
Shire Breeding Farm, London, O.....	Nettie .....	First....	10 00
Shire Breeding Farm, London, O.....	Ruth .....	Second..	5 00
Filly Colt.			
Shire Breeding Farm, London, O.....	.....	First....	5 00

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion with 4 of His Colts.			
Shire Breeding Farm, London, O.....	Conqueror and 4 colts.....	First....	\$25 00
Mare with 2 of Her Progeny.			
Shire Breeding Farm, London, O.....	Trojan Bell and colts.....	First....	20 00

H. GERMAN, JR., Expert Judge.

## BELGIANS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 Years Old and Over.			
Ed. Courtright, Galloway, O.....	Caesar .....	First....	\$20 00

H. GERMAN, JR., Expert Judge.

## GRADE COACH HORSES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Gelding or Mare 4 Years Old or Over.			
S. H. Turner, Columbus, O.....	Colonel .....	First....	\$10 00
Fred P. Gordon, London, O.....		Second..	5 00
Ohio State University, Columbus, O.....			
J. W. Shaw, Cardington, O.....			
J. W. Shaw, Cardington, O.....			
Wm. Brimbee, Cardington, O.....			
McLaughlin Bros., Columbus, O.....	Hannah .....		
Milo G. Main, Delaware, O.....	Jim .....		
David O. Evans, Newark, O.....			
A. B. Grove, Newark, O.....			
H. F. Morgan, Columbus, O.....			
Fred P. Gordon, London, O.....	General .....		
Len Adsit, Octa, O.....			
D. A. Sprague, South Charleston, O.....			
Gelding or Mare 8 Years Old and Under 4.			
C. H. Surface, Waynesville, O.....		First....	10 00
G. J. Fleming, Stantontown, O.....		Second..	5 00
G. W. Hiskett & Son, Fulton, O.....	Dewey .....		
D. B. Pittsford, Newark, O.....	Jno. Huddleston.....		
Gelding or Mare 2 Years Old and Under 3.			
W. E. Garlinghouse, Galena, O.....	Billy .....	First....	10 00
J. S. Van Ness, Mechanicsburg, O.....	Harry .....	Second..	5 00
J. W. Snyder, Cardington, O.....			
H. L. Eckles, Cardington, O.....			
Gelding or Mare 1 Year Old and Under 2.			
Geo. A. Geyer, Alton, O.....	Nancy .....		

First... 10 00



## GRADE COACH HORSES — Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Matched Team.			
S. H. Turner, Columbus, O.....	.....	First....	15 00
J. W. Shaw, Cardington, O.....	.....	Second..	8 00
Wm. Brimbee, Cardington, O.....	.....		
F. E. Powell, Jr., Columbus, O.....	.....		
H. F. Morgan, Columbus, O.....	.....		

W. T. HENDERSON, Expert Judge.

## GRADE DRAFT.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Gelding or Mare 4 Years Old or Over.			
H. Domigan, Berkshire, O.....	.....	First....	\$10 00
J. H. Jenkins, Mt. Liberty, O.....	.....	Second..	5 00
Same	.....		
Matthias Fladt, Hilliards, O.....	Flora		
Same	Nellie		
Eugene Sites, Elyria, O.....	.....		
Gelding or Mare 3 Years Old and Under 4.			
Matthias Fladt, Hilliards, O.....	Jennie	First....	10 00
Gelding or Mare 2 Years Old and Under 3.			
Elmer Roloson, West Berlin, O.....	Flora	First....	10 00
H. L. Eckels, Cardington, O.....	Martha	Second..	5 00
C. W. O'Harra, Galloway, O.....	Beauty		
C. W. O'Harra, Galloway, O.....	Billie		
Gelding or Mare 1 Year Old and Under 2.			
Matthias Fladt, Hilliards, O.....	Maud	First....	10 00
Matched Team.			
Howard Domigan, Berkshire, O.....	.....	First....	\$15 00
Matthias Fladt, Hilliards, O.....	.....	Second..	8 00

H. GERMAN, JR., Expert Judge.

## SADDLE HORSES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 Years Old or Over.			
E. L. McCollum, Columbus, O.....	Wilmore .....	First....	15 00
E. L. McCollum, Columbus, O.....	Belgium Denmark.....	Second..	8 00
Stallion Under 4 Years.			
J. A. Wallace, Columbus, O.....	The Dutchman.....	First....	10 00
E. L. McCollum, Columbus, O.....	Earl Mack.....	Second..	5 00
Mare 4 Years Old or Over.			
J. B. Vause, Lockbourne, O.....	Lonie .....	First....	15 00
E. L. McCollum, Columbus, O.....	Rocket .....	Second..	8 00
Haseltine Bros., Youngstown, O.....	Fern Leaf.....		
Gelding 4 Years Old or Over.			
Jas. Kincaid, Columbus, O.....	Nathan B.....	First....	15 00
J. A. Wallace, Columbus, O.....	Black Prince.....	Second..	8 00
J. C. Campbell, Columbus, O.....	Frank C.....		
D. S. Loving, Columbus, O.....	Four .....		
D. S. Loving, Columbus, O.....	Walker .....		
E. L. McCollum, Columbus, O.....	Harry .....		
Charles Baers, Shalesville, O.....	Duke .....		
E. L. McCollum, Columbus, O.....	Buckskin .....		
Gelding Under 4 Years.			
J. A. Wallace, Columbus, O.....	Dan D.....		

O. A. LEHMAN, Expert Judge.

## COMBINED HARNESS AND SADDLE HORSES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallions.			
E. L. McCollum, Columbus, O.....	Wilmore .....	First....	\$15 00
J. A. Wallace, Columbus, O.....	The Dutchman.....	Second..	8 00
E. L. McCollum, Columbus, O.....	Earl Mack.....		
Mare or Gelding.			
J. A. Wallace, Columbus, O.....	Black Prince.....	First....	15 00
Jas. Kincaid, Columbus, O.....	Nathan B.....	Second..	8 00
J. B. Vause, Lockbourne, O.....	Larrie .....		
E. L. McCollum, Columbus, O.....	Harry .....		
Same .....	Rocket .....		
Charles Baers, Shalesville, O.....	Duke .....		

## HIGH SCHOOL HORSE, MARE OR GELDING.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Haseltine Bros., Youngstown, O.....	Fern Leaf.....	First....	\$15 00
J. A. Wallace, Columbus, O.....	Black Prince.....	Second..	8 00
Charles Baers, Shalesville, O.....	Duke .....		

O. A. LEHMAN, Expert Judge.

## MATCHED HORSES AND FANCY DRIVERS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Matched Roadsters.			
S. H. Turner, Columbus, O.....	Jim and Harry.....	First....	\$20 00
C. H. Surface, Waynesville, O.....		Second..	10 00
David O. Evans, Newark, O.....			
H. F. Morgan, Columbus, O.....			
Gentleman's Fancy Driving Team.			
S. H. Turner, Columbus, O.....		First....	20 00
Lew Adsit, Octa, O.....		Second..	10 00
Gentleman's Fancy Single Driyer.			
F. E. Powell, Columbus, O.....	Walnut Boy.....	First....	10 00
J. A. Hall, Columbus, O.....		Second..	5 00
Grace Davis, Columbus, O.....	Bob Fitzsimons.....		
J. W. Shaw, Cardington, O.....			
F. & R. Lazarus, Columbus, O.....	F. & R.....		
S. H. Turner, Columbus, O.....			
Paul W. Stephens, Delaware, O.....			
Carl Williams, Columbus, O.....			
D. S. Ambach, Columbus, O.....			
David O. Evans, Newark, O.....			
Charles Hartsock, Cardington, O.....			
G. W. Hiskett & Son, Fulton, O.....			
J. T. Hanawalt, Delaware, O.....			
Lew Adsit, Octa, O.....			
McLaughlin Bros., Columbus, O.....			
Single Horse Driven by a Lady.			
S. H. Turner, Columbus, O.....	Billy Wissinger.....	First....	5 00
Grace Davis, Columbus, O.....		Second..	3 00
McLaughlin Bros., Columbus, O.....			
Double Team Driven by a Lady.			
S. H. Turner, Columbus, O.....		First....	10 00
J. F. Morgan, Columbus, O.....			

## SHETLAND PONIES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Stallion 3 Years Old or Over.</b>			
Cobb Gavitt, Ashley, O.....	Ben Harrison.....	First....	\$15 00
Cobb Gavitt, Ashley, O.....	Meikel John.....	Second..	8 00
<b>Stallion 2 Years Old and Under 3.</b>			
Cobb Gavitt, Ashley, O.....	Billy .....	First....	10 00
<b>Stallion 1 Year Old and Under 2.</b>			
Cobb Gavitt, Ashley, O.....		First....	5 00
<b>Stallion Under 1 Year.</b>			
W. H. Curtice, Eminence, Ky.....	Ben Hur.....	First....	3 00
W. H. Curtice, Eminence, Ky.....	Joe Patchen .....	Second..	2 00
Cobb Gavitt, Ashley, O.....			
<b>Mare 3 Years Old or Over.</b>			
Cobb Gavitt, Ashley, O.....		First....	10 00
Cobb Gavitt, Ashley, O.....		Second..	5 00

## SHETLAND PONIES — Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Mare 2 Years Old and Under 3.			
Cobb Gavitt, Ashley, O.....	.....	First....	10 00
Cobb Gavitt, Ashley, O.....	.....	Second..	5 00
Filly 1 Year Old and Under 2.			
Cobb Gavitt, Ashley, O.....	.....	First....	5 00
Filly Under 1 Year.			
Cobb Gavitt, Ashley, O.....	.....	First....	3 00
W. H. Curtice, Eminence, Ky.....	Lady May.....	Second..	2 00

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Herd.			
Cobb Gavitt, Ashley, O.....	.....	First....	\$20 00

A. J. CLARK, Expert Judge.

## PONIES.

All Breeds, Except Shetlands.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 3 Years Old or Over.			
L. Ferguson, Newark, O.....	Dandy F.....	First....	\$15 00
Mare 3 Years Old or Over.			
L. Ferguson, Newark, O.....	Nancy F.....	First....	10 00
Cobb Gavitt, Ashley, O.....	.....	Second..	5 00
Mare 2 Years Old and Under 3.			
Cobb Gavitt, Ashley, O.....	.....	First....	10 00

A. J. CLARK, Expert Judge.

## PONY TURNOUTS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Single Turnout Driven by Boy or Girl Under 14 Years of Age.			
L. Ferguson, Newark, O.....	.....	First....	\$10 00
Cobb Gavitt, Ashley, O.....	.....	Second..	5 00
Grace Davis, Columbus, O.....	.....		
Double Team Turnout Driven by Boy or Girl Under 14 Years of Age.			
Cobb Gavitt, Ashley, O.....	.....	First....	12 00
L. Ferguson, Newark, O.....	.....	Second..	6 00
Cobb Gavitt, Ashley, O.....	.....		
Tandem.			
Cobb Gavitt, Ashley, O.....	.....	First....	10 00
Four-in-hand.			
Cobb Gavitt, Ashley, O.....	.....	First....	12 00

A. J. CLARK, Expert Judge.

## SPECIAL PREMIUMS.

Offered by the American Percheron Horse Breeders' Association.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Open to All Classes.			
McLaughlin Bros., Columbus, O.....	Henry, 41,472.....	First....	Gold M
McLaughlin Bros., Columbus, O.....	Savir, 43,191.....	Second..	Sil'r M
McLaughlin Bros., Columbus, O.....	Vidock, 42,075.....	Third....	Br'zeM

Offered by the French Coach Horse Society of America.

McLaughlin Bros., Columbus, O.....	Sans Peur, 2,228.....	First....	Gold M
McLaughlin Bros., Columbus, O.....	Serge, 2,094.....	Second..	Sil'r M
McLaughlin Bros., Columbus, O.....	Servio, 2,231.....	Third....	Br'zeM

C. M. JOHNSON, Expert Judge.

## SUMMARY OF THE RACES.

Three-year-old and Under Trot—Eligible to a 2:35 Class.

Entered by	Name of Animal.	Heats.	
W. McClaren, Kilbourne, O.....	Minnie Parks, g. f....	3	4
H. J. Jameson, Delaware, O.....	The Maine.....	1	1
W. F. Freeman, Lexington, Ky.....	Memento, b. f.....	2	2
A. B. Grove, Newark, O.....	Almerion, b. s.....	4	3

Time — 2.35¼, 2.31¼.

## 2:20 CLASS — TROTting.

Entered by	Name of Animal.	Heats.	
Huntington Brown, Mansfield, O.....	Thornwick, ch. m....	5	1 1 4 4 2
V. E. Thomson, Portsmouth, O.....	Black Beauty, blk. g.	1	2 3 2 3 3
M. O. Stokes, Springfield, O.....	Bessie K., b. m.....	2	3 2 1 1 1
W. B. Bryson, Xenia, O.....	Advance, b. g.....	8	7 8 5 6
Foster Webb, Hamilton, O.....	Pantheon B., br. s....	7	6 7 6 1 Dr.
E. J. Worth, South Charleston, O.....	Earl of Linkhurst, blk. s.	3	8 6 7 7
G. W. Gilliland, Syracuse, O.....	Billy Russell, b. s....	4	5 5 8 5
J. W. Townsley, Jamestown, O.....	Royalwood, blk. h....	6	4 4 3 2

Time — 2.21¼, 2.19¼, 2.20¼, 2.22¼, 2.23¼, 2.23.

## 2:19 CLASS — PACING.

Entered by	Name of Animal.	Heats.	
G. W. Greeno, Gallatin, Tenn.....	Sweet Fern, c. s.....	3	11 13 7 1 1 1
H. J. Jameson, Delaware, O.....	Hardee Boy.....	4	3 1 1 2 6 4
J. Craig, Mansfield, O.....	Lady Garnett, b. m....	1	2 3 6 9 3 5
John A. Hall, Columbus, O.....	Minnie Young, g. m....	12	1 5 10 4 5 6
F. P. Mitchell, London, O.....	Dunbar.....	..	.. .. .
C. H. Morline, Cardington, O.....	So Sure, b. s.....	..	.. .. .
Harry J. Perry, Zanesville, O.....	T. L. M., b. g.....	..	.. .. .
U. R. Guthery, Marion, O.....	E. M. G., br. s.....	..	.. .. .
A. E. Evans, Columbus, O.....	Halma Patchen, b. g....	..	.. .. .
D. M. Lake, Columbus, O.....	Insure, b. g.....	..	.. .. .
J. F. Cherry, Lancaster, O.....	Red Rock, b. s.....	..	.. .. .
O. C. Whitson, North Burlington, O.....	Legal Hontas, s. s....	..	.. .. .
Frank Current, Elizabeth, Ky.....	Hindoo Boy, b. g.....	..	.. .. .

Time — 2.16¼, 2.17¼, 2.18¼, 2.19¼, 2.19¼, 2.19¼, 2.22.

## 2:40 CLASS — TROTting.

Entered by	Name of Animal.	Heats.	
J. W. Tucker, Newark, O.....	Hila L., spot. m.....	3	4 2
F. Current, Elizabeth, Ky.....	Mollie Rene.....	5	5 5
Albert Crooks, Zanesville, O.....	Royal Cosack, b. g....	4	3 4
H. J. Jameson, Delaware, O.....	The Maine.....	2	2 8
Chas. Siegle, Newark, O.....	Roamer, br. s.....	1	1 1

Time — 2.36¼, 2.28¼, 2.28¼.

## 2:25 CLASS — TROTTING.

Entered by	Name of Animal.	Heats.
F. Van Voorhis, Zanesville, O.....	Aerial Highwood, b. h.	2 3 3
Jas. E. Robinson, Richwood, O.....	Zip .....	5 5 5
J. L. Grove, Newark, O.....	Chicago Prince, b. s.	4 4 4
Grant W. Fritz, Dayton, O.....	Maiborn, b. f.....	3 2 2
Fuller Stock Farm, Cedar Springs, Mich.....	Failnot, br. s.....	1 1 1

Time — 2.23¼, 2.21¼, 2.24½.

## 2:27 CLASS — PACING.

Entered by	Name of Animal.	Heats.
Wm. Henderson, Crownpoint, Ind.....	Billy Boy, ch. s.....	3 Dis.
A. L. Honaker, Springfield, O.....	Nanie C., m.....	4 3 2
D. M. Lake, Columbus, O.....	Rock, b. g.....	2 2 3
John Holden, Corning, O.....	Nellie R., b. m.....	5 4 4
F. E. Freeman, Thornton, O.....	Cuba, b. m.....	Dis.
O. C. Whitson, North Burlington, O.....*	Lady Hal, bl. m.....	1 1 1
John Syndusky, Gahanna, O.....	Rooster Boy, g. s.....	Dis.

Time — 2.19¼, 2.19½, 2.20½.

## 2:15 CLASS — TROTTING.

Entered by	Name of Animal.	Heats.
Jno. A. Hall, Columbus, O.....	Pug, gr. g.....	3 2 1 1 2 2
F. P. Mitchell, London, O.....	Rainforth .....	Dis.
Chas. Seigle, Newark, O.....	Will Lane, b. g.....	1 3 Dis.
G. W. Jamison, Delaware, O.....	Black Raven, blk. s.	2 1 2 2 1 1

Time — 2.18¼, 2.19½, 2.19¼, 2.19¼, 2.21, 2.21½.

## 2:30 CLASS — TROTTING.

Entered by	Name of Animal.	Heats.
D. A. Sprague, South Charleston, O.....	Banner Bell, br. s....	Dis.
Wm. Henderson, Crownpoint, Ind.....	Charlie Negis, sr.....	2 2 2
R. Berkshire, Christiansburg, O.....	Pauline B., b. m.....	1 1 1
F. P. Mitchell, London, O.....	Fitzhugh Lee.....	3 3 3

Time — 2.24¼, 2.24¾, 2.29¼.

## HURDLE RACE — ONE MILE DASH.

Entered by	Name of Animal.	Heats.
B. F. Jameson, Washington C. H., O.....	Harrison H. Walla, br. g.	2
C. E. Hudson, Cleveland, O.....	Borderer, b. s.....	3
H. C. Welsh, Grove City, O.....	Lord Russell, s. g.....	4
Frank Hickman, Newark, O.....	Disaplain, s. h.....	1

Time — 1.50½.

## RUNNING — ONE MILE DASH.

Entered by	Name of Animal.	Heats.
Brady Hall, Waynesfield, Ky.....	Aunt Dinah, ch. f....	..
Chas. Talbot, Columbus, O.....	Tillie Herr, b. m.....	..
W. Penny, Richmond, O.....	Darius, br. g.....	..
R. F. Brown, Alexandria, Va.....	Earne, ch. h.....	3
Ben Waddle, Marion, O.....	Ben Waddle, b. g.....	..
M. J. Nye, Burton, O.....	Ermilin, b. f.....	..
M. M. Connell, Chillicothe, O.....	Forbearance, sr. m....	1
S. W. Lyon, Columbus, O.....	Schwenker, sr. g.....	2
W. R. Callopy, Washington C. H., O.....	Tidiness, b. m.....	..

Time — 1.47½.

## RUNNING — HALF MILE HEATS.

Entered by	Name of Animal.	Heats.
Archie Brunk, Miamisville, O.....	Fritzie Mack, ch. g..	.. 3 ..
W. H. Lewis, Philadelphia, Pa.....	Flaxie B., sr. m.....	1 .. 1
H. Numan, Cleveland, O.....	Miss Callaghan, ch. m.	.. .. ..
Ed. E. Peck, Cleveland, O.....	Cora R., b. m.....	.. .. ..
J. M. Carver, Alexandria, Ind.....	Charlie Wells, blk. g..	2 2 ..
H. W. Harwood, St. Louis, Mo.....	Dora La Mar, ch. m..	.. .. ..
O. P. Orr, Uniopolis, O.....	Munden ..	3 .. ..
J. W. Mann & Co., Fernville, O.....	Volida, s. m.....	.. 1 2

Time — .50, .50, .50½.

## RUNNING — DASH OF ONE MILE AND A FURLONG.

Entered by	Name of Animal.	Heats.
Ben Waddle, Marion, O.....	Ben Waddle, b. g....	3
S. W. Lyon, Columbus, O.....	Dauntless, b. g.....	1
Chas. Talbot, Columbus, O.....	Tillie Herr, b. m.....	..
R. F. Brown, Alexandria, Va.....	Earne, ch. h.....	..
Toney McAdams, Columbus, O.....	Peggy, br. h.....	..
Ed. Carter, Lexington, Ky.....	Ada Russell, ch. m..	2
W. R. Callopy, Washington C. H., O.....	Elsie Bramble, b. m..	..

Time — 1.50¼.



## RUNNING — ONE MILE DASH.

Entered by	Name of Animal.	Heats.
J. W. Mann & Co., Fernville, O.....	Volida, s. m.....	..
Ed. Carter, Lexington, Ky.....	Ada Russell, ch. m...	2
C. H. Porter, Washington C. H., O.....	Sun Cross, s. g.....	..
M. J. Nye, Burton, O.....	Ermline, b. f.....	..
Robt. Morrell, Sabina, O.....	Revenge, br. g.....	3
W. R. Callopy, Washington C. H., O.....	Tidiness, b. m.....	1
L. L. Street, Richwood, O.....	Darius, br. g.....	..

Time — 1.44½.

## HURDLE RACE — ONE MILE DASH.

Entered by	Name of Animal.	Heats.
T. M. Kent, Richwood, O.....	Rouble, b. g.....	..
H. C. Jameson, Washington C. H., O.....	H. H. Walls, br. g..	2
F. Hickman, Newark, O.....	Displaine, s. h.....	1
C. E. Hudson, Cleveland, O.....	Borderer, b. s.....	..
H. S. Franklin, Chillicothe, O.....	Lazzara, s. g.....	3

Time — 1.58.

## RUNNING — HALF MILE HEATS.

Entered by	Name of Animal.	Heats.
J. Anderson, Carnegie, Pa.....	Red Bird, Jr., b. f...	.. ..
John Gehan, Towanda, Iowa.....	Saticon, b. s.....	2 2
Bell & Moore.....	Lenox, b. g.....	3 2
W. H. Lewis, Philadelphia, Pa.....	Flaxie B., s. m.....	1 1
D. Kilby, Cleveland, O.....	Little Billy, b. g.....	.. ..

Time — 50½, 51.

## CONSOLATION RACE — HALF MILE HEATS.

Entered by	Name of Animal.	Heats.
H. W. Harwood, St. Louis, Mo.....	Dorah Lamar, ch. m..	.. ..
Ed. E. Peck, Cleveland, O.....	Cora R., b. m.....	3 2
J. Anderson, Carnegie, Pa.....	Red Bird, Jr., b. f...	3 ..
J. M. Carver, Alexandria, Ind.....	Charlie Wells, blk. g..	.. ..
C. E. Hudson, Cleveland, O.....	Borderer, b. s.....	.. ..
J. W. Mann & Co., Fernville, O.....	Volida, s. m.....	.. 3
H. Numan, Cleveland, O.....	Miss Callaghan, ch. m.	.. ..
Archie Brunk, Miamisville, O.....	Fritzie Mack, ch. g...	.. ..
Ed. Carter, Lexington, Ky.....	Ada Russell, ch. m..	1 1

Time — .51¼, .51.

## HANDICAP — DASH OF ONE MILE.

Entered by	Name of Animal.	Heats.
S. W. Lyon, Columbus, O.....	Schwenker, sr. g.....	..
J. Anderson, Carnegie, Pa.....	Taunton .....	2
Ben Waddle, Marion, O.....	Ben Waddle, b. g.....	..
Tony McAdam, Columbus, O.....	Peggy, br. h.....	..
L. L. Street, Richmond, O.....	Darius, br. g.....	3
H. C. Dipple, Indianapolis, Ind.....	Ben O'Fallen, ch. g.....	..
Ed. Carter, Lexington, Ky.....	Ada Russell, ch. m.....	1

Time -- 1.32

## CATTLE—J. S. STUCKY, Member in Charge.

## SHORTHORNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 Years Old or Over.			
W. T. Miller & Son, Carlos, Ind.....	Royal Hero.....	First....	\$20 00
C. Hintz, Fremont, O.....	Colonel.....	Second..	10 00
Darling Bros., Nellie, O.....	Shannon Abbott.....	.....	.....
Bull 2 Years Old and Under 3.			
Darling Bros., Nellie, O.....	Glen Aberdeen.....	First....	20 00
Bull 1 Year Old and Under 2.			
Darling Bros., Nellie, O.....	Aberdeen III.....	First....	10 00
C. Hintz, Fremont, O.....	Monarch.....	Second..	5 00
Darling Bros., Nellie, O.....	Duke of Warsaw.....	.....	.....
Bull Under 1 Year.			
Darling Bros., Nellie, O.....	Duke of Mohawk.....	First....	5 00
C. Hintz, Fremont, O.....	Royal Star.....	Second..	3 00
Same.....	Harvey II.....	.....	.....
W. T. Miller & Son, Carlos, Ind.....	Commander.....	.....	.....
Darling Bros., Nellie, O.....	Duke of Warsaw.....	.....	.....
Cow 3 Years Old or Over.			
W. T. Miller & Son, Carlos, Ind.....	Sallie Girl.....	First....	15 00
C. Hintz, Fremont, O.....	Oxford Bell.....	Second..	10 00
Same.....	Rosebud.....	.....	.....
Darling Bros., Nellie, O.....	Beauty.....	.....	.....
Cow or Heifer 2 Years Old and Under 3.			
W. T. Miller & Son, Carlos, Ind.....	Snow Ball.....	First....	10 00
Darling Bros., Nellie, O.....	Golden Belle II.....	Second..	5 00
Same.....	Belle of Warsaw.....	.....	.....
C. Hintz, Fremont, O.....	Ruby Hill IV.....	.....	.....
Same.....	Mina Lass X.....	.....	.....
Heifer 1 Year Old and Under 2.			
C. Hintz, Fremont, O.....	Beauty of Oriel.....	First....	10 00
W. T. Miller & Sons, Carlos, Ind.....	Sun Beam.....	Second..	5 00
C. Hintz, Fremont, O.....	Wild Duchess May.....	.....	.....
Darling Bros., Nellie, O.....	Mary.....	.....	.....
Same.....	Belle of Warsaw.....	.....	.....
Heifer Calf.			
W. T. Miller & Son, Carlos, Ind.....	Roan Marble.....	First....	5 00
C. Hintz, Fremont, O.....	Beauty of Mermaid.....	Second..	3 00
Same.....	Wild Duchess Mary II.....	.....	.....
Darling Bros., Nellie, O.....	Belle of Warsaw.....	.....	.....
Same.....	.....	.....	.....

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>EXHIBITOR'S HERD.</b>			
Herd Owned by Exhibitor.			
W. T. Miller & Sons, Carlos, Ind.....		First....	\$40 00
C. Hintz, Fremont, O.....		Second....	
Darling Bros., Nellie, O.....			
<b>BREEDER'S HERDS.</b>			
Graded Herd.			
Darling Bros., Nellie, O.....		First....	40 00
Four Animals of Either Sex.			
W. T. Miller & Sons, Carlos, Ind.....		First....	30 00
Darling Bros., Nellie, O.....			

G. M. ROUDEBUSH, Expert Judge.

## DEVONS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Bull 3 Years Old or Over.</b>			
W. E. Lewis, Casstown, O.....	Burton .....	First....	\$20 00
U. B. Moyer, Cory, O.....	Upright .....	Second..	10 00
E. S. Whitmore, Troy, O.....			
<b>Bull 2 Years Old and Under 3.</b>			
W. E. Lewis, Casstown, O.....	Bremen .....	First....	20 00
<b>Bull 1 Year Old and Under 2.</b>			
E. S. Whitmore, Troy, O.....	Henry R.....	First....	10 00
W. E. Lewis, Casstown, O.....	Twilight .....	Second..	5 00
U. B. Moyer, Cory, O.....			
<b>Bull Under 1 Year.</b>			
E. S. Whitmore, Troy, O.....	Bogardus .....	First....	5 00
W. E. Lewis, Casstown, O.....	Baby L.....	Second..	3 00
E. S. Whitmore, Troy, O.....	Wapak .....		
U. B. Moyer, Cory, O.....			
<b>Cow 3 Years Old or Over.</b>			
U. B. Moyer, Cory, O.....	Prich .....	First....	15 00
E. S. Whitmore, Troy, O.....	Charlotte Breute.....	Second..	10 00
Same	Dora V.....		
W. E. Lewis, Casstown, O.....	Florence .....		
Same	Carrie H.....		
U. B. Moyer, Cory, O.....	Cherry M.....		
<b>Cow or Heifer 2 Years Old and Under 3.</b>			
U. B. Moyer, Cory, O.....	Bright Promise.....	First....	10 00
Same	Beauty .....	Second..	5 00
W. E. Lewis, Casstown, O.....	Myrtle L. II.....		
Same	Blanche .....		
E. S. Whitmore, Troy, O.....	Francis M.....		
Same	Edith M.....		

## DEVONS — Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Heifer 1 Year Old and Under 2.			
W. E. Lewis, Casstown, O.....	Scott L .....	First....	10 00
E. S. Whitmore, Troy, O.....	Millie R .....	Second..	5 00
W. E. Lewis, Casstown, O.....	Sadie L .....		
U. B. Moyer, Cory, O.....	Julien .....		
Heifer Under 1 Year.			
W. E. Lewis, Casstown, O.....	Trixie .....	First....	5 00
E. S. Whitmore, Troy, O.....	Geno .....	Second..	8 00
Same .....	Hellen G.....		
W. E. Lewis, Casstown, O.....	Pride .....		
U. B. Moyer, Cory, O.....			
Same .....			

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Herd Owned by Exhibitor.			
W. E. Lewis, Casstown, O.....		First....	\$40 00
E. S. Whitmore, Troy, O.....			
U. B. Moyer, Cory, O.....			
BREEDER'S HERDS.			
Graded Herd.			
W. E. Lewis, Casstown, O.....		First....	40 00
Four Animals of Either Sex.			
U. B. Moyer, Cory, O.....		First....	20 00
E. S. Whitmore, Troy, O.....			

G. W. HISKETT, Expert Judge.

## HEREFORDS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 Years Old or Over.			
W. H. Curtice, Eminence, Ky.....		First....	\$20 00
Bull 2 Years Old and Under 8.			
John Hooker, New London, O.....	Bealdie .....	First....	20 00
Bull 1 Year Old and Under 2.			
John Hooker, New London, O.....	Mark Hanna.....	First....	10 00
W. H. Curtice, Eminence, Ky.....	Bodonald .....	Second..	5 00
Same .....	Pony .....		
Same .....			

## HRRFORDS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Bull Under 1 Year.</b>			
John Hooker, New London, O.....	Sampson .....	First....	5 00
W. H. Curtice, Eminence, Ky.....	.....	Second..	3 00
Same .....	.....	.....	.....
<b>Cow 3 Years Old or Over.</b>			
John Hooker, New London, O.....	Dolly II.....	First....	15 00
Same .....	Maple Leaf.....	Second..	10 00
<b>Cow or Heifer 2 Years Old and Under 3.</b>			
John Hooker, New London, O.....	Alice .....	First....	10 00
Same .....	Dolly VI.....	Second..	5 00
<b>Heifer 1 Year Old and Under 2.</b>			
John Hooker, New London, O.....	Belle of Maplewood II.....	First....	10 00
Same .....	Alice II.....	Second..	5 00
W. H. Curtice, Eminence, Ky.....	Belle Donald II.....	.....	.....
Same .....	Belle Donald IV.....	.....	.....
<b>Heifer Under 1 Year.</b>			
John Hooker, New London, O.....	Belle of Maplewood.....	First....	5 00
Same .....	Burben of Maplewood.....	Second..	3 00
Same .....	Burben Queen III.....	.....	.....
W. H. Curtice, Eminence, Ky.....	Miss Curtice .....	.....	.....
Same .....	Mary .....	.....	.....
Same .....	White Socks.....	.....	.....
Same .....	Curley .....	.....	.....

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>EXHIBITOR'S HERD.</b>			
<b>Herd Owned by Exhibitor.</b>			
John Hooker, New London, O.....	.....	First....	\$40 00
<b>BREEDER'S HERDS.</b>			
<b>Graded Herd.</b>			
John Hooker, New London, O.....	.....	First....	40 00
W. H. Curtice, Eminence, Ky.....	.....	.....	.....
<b>Four Animals of Either Sex.</b>			
John Hooker, New London, O.....	.....	First....	30 00
W. H. Curtice, Eminence, Ky.....	.....	.....	.....

G. W. HICKERT, Expert Judge.

## SPECIAL PREMIUMS

Offered by the American Herford Cattle Breeders' Association.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 Years Old or Over.			
W. H. Curtice, Eminence, Ky.....	.....	First....	\$14 00
Bull 2 Years Old and Under 3.			
John Hooker, New London, O.....	Bealdie .....	First....	14 00
Bull 1 Year Old and Under 2.			
John Hooker, New London, O.....	Mark Hanna.....	First....	12 00
W. H. Curtice, Eminence, Ky.....	Bodonold .....	Second..	8 00
Same .....	Pony .....	Third...	4 00
Same .....	.....	.....	.....
Bull Under 1 Year.			
John Hooker, New London, O.....	Sampson .....	First....	12 00
W. H. Curtice, Eminence, Ky.....	.....	Second..	8 00
Same .....	.....	Third...	4 00
Cow 3 Years Old or Over.			
John Hooker, New London, O.....	Dolly II.....	First....	14 00
Same .....	Maple Leaf.....	Second..	8 00
Cow or Heifer 2 Years Old and Under 3.			
John Hooker, New London, O.....	Alice .....	First....	\$14 00
Same .....	Dolly VI.....	Second..	8 00
Heifer 1 Year Old and Under 2.			
John Hooker, New London, O.....	Belle of Maplewood II....	First....	12 00
Same .....	Alice II.....	Second..	8 00
W. H. Curtice, Eminence, Ky.....	Belle Donald IV.....	Third...	4 00
Same .....	Belle Donald II.....	.....	.....
Heifer Under 1 Year.			
John Hooker, New London, O.....	Belle of Maplewood III....	First....	12 00
Same .....	Burben of Maplewood.....	Second..	8 00
Same .....	Burben Queen III.....	Third...	4 00
W. H. Curtice, Eminence, Ky.....	Miss Curtice.....	.....	.....
Same .....	Mary .....	.....	.....
Same .....	White Socks.....	.....	.....
Same .....	Curley .....	.....	.....

## JERSEYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 Years Old or Over.			
Mrs. Jennie E. Hall, Columbus, O.....	King Hugo Pogis.....	First....	\$20 00
Ben Ames, Mt. Vernon, O.....	Etta Marius II.....	Second..	10 00
L. S. McClellan & Co., Cable, O.....	.....	.....	.....
W. H. O'Goist, Girard, O.....	St. Pogis Prospect.....	.....	.....
Bull 2 Years Old and Under 3.			
W. H. O'Goist, Girard, O.....	Cedar Groves' St. Lambert.	First....	20 00
L. S. McClellan & Co., Cable, O.....	.....	Second..	10 00
Mrs. Jennie E. Hall, Columbus, O.....	Inbred St. Lambert.....	.....	.....

## JERSEYS — Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Bull 1 Year Old and Under 2.</b>			
W. H. O'Goist, Girard, O.....	Nancy's Signa.....	First....	10 00
L. S. McClellan & Co., Cable, O.....	.....	Second..	5 00
Ohio State University, Columbus, O.....	.....	.....	.....
Ben Ames, Mt. Vernon, O.....	Sozius II.....	.....	.....
Mrs. Jennie E. Hall, Columbus, O.....	.....	.....	.....
<b>Bull Under 1 Year.</b>			
W. H. O'Goist, Girard, O.....	Dode.....	First....	5 00
L. S. McClellan & Co., Cable, O.....	.....	Second..	8 00
Mrs. Jennie E. Hall, Columbus, O.....	Melbina Boy.....	.....	.....
Ben Ames, Mt. Vernon, O.....	Signal Rock.....	.....	.....
Same.....	Lakehome Signolyun.....	.....	.....
L. S. McClellan & Co., Cable, O.....	.....	.....	.....
Same.....	.....	.....	.....
W. H. O'Goist, Girard, O.....	Major of Cedar Grove.....	.....	.....
<b>Cow 3 Years Old or Over.</b>			
W. H. O'Goist, Girard, O.....	Clochette Pogis.....	First....	15 00
Mrs. Jennie E. Hall, Columbus, O.....	.....	Second..	10 00
Same.....	.....	.....	.....
Same.....	Melbina.....	.....	.....
Ben Ames, Mt. Vernon, O.....	Etta Rock.....	.....	.....
Same.....	Bartha.....	.....	.....
L. S. McClellan & Co., Cable, O.....	Victorias Fancy.....	.....	.....
Same.....	Eunice D.....	.....	.....
W. H. O'Goist, Girard, O.....	Lyme of Maple Grove.....	.....	.....
Same.....	Handy Madame.....	.....	.....
Same.....	Princess Wellington.....	.....	.....
<b>Cow 2 Years Old and Under 3.</b>			
L. S. McClellan & Co., Cable, O.....	.....	First....	10 00
Mrs. Jennie E. Hall, Columbus, O.....	.....	Second..	5 00
Same.....	.....	.....	.....
Ben Ames, Mt. Vernon, O.....	Many More.....	.....	.....
Same.....	Subtile.....	.....	.....
W. H. O'Goist, Columbus, O.....	Lyme of Cedarville.....	.....	.....
<b>Cow or Heifer 1 Year Old and Under 2.</b>			
Mrs. Jennie E. Hall, Columbus, O.....	Ondre Rex.....	First....	10 00
Same.....	Winnie.....	Second..	5 00
Ben Ames, Mt. Vernon, O.....	Very Much More.....	.....	.....
Same.....	Sagimore.....	.....	.....
L. S. McClellan & Co., Cable, O.....	.....	.....	.....
Same.....	.....	.....	.....
W. H. O'Goist, Girard, O.....	Alderado of Cedarville.....	.....	.....
Same.....	Clochette Pogis II.....	.....	.....
<b>Heifer Under 1 Year.</b>			
W. H. O'Goist, Girard, O.....	.....	First....	5 00
Same.....	.....	Second..	3 00
Same.....	.....	.....	.....
Mrs. Jennie E. Hall, Columbus, O.....	.....	.....	.....
Same.....	.....	.....	.....
Same.....	.....	.....	.....
Same.....	.....	.....	.....
Ben Ames, Mt. Vernon, O.....	So Many More.....	.....	.....
Same.....	Ethel Signal Rex.....	.....	.....
L. S. McClellan, Cable, O.....	.....	.....	.....



## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>EXHIBITOR'S HERD.</b>			
Herd Owned by the Exhibitor.			
W. H. O'Goist, Girard, O.....	Cedargrove St. Lambert...	First....	\$40 00
Mrs. Jennie E. Hall, Columbus, O.....	.....	.....	.....
Ben Ames, Mt. Vernon, O.....	.....	.....	.....
L. S. McClellan & Co., Cable, O.....	.....	.....	.....
<b>BREEDER'S HERDS.</b>			
Graded Herd.			
Mrs. Jennie E. Hall, Columbus, O.....	.....	First....	40 00
Ben Ames, Mt. Vernon, O.....	.....	.....	.....
W. H. O'Goist, Girard, O.....	.....	.....	.....
Four Animals of Either Sex.			
Mrs. Jennie E. Hall, Columbus, O.....	.....	First....	30 00
Ben Ames, Mt. Vernon, O.....	.....	.....	.....
W. H. O'Goist, Girard, O.....	.....	.....	.....

CLAYTON C. TAYLOR, Expert Judge.

## POLLED JERSEYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 8 Years Old or Over.			
T. L. Robbins, Leonard, O.....	Alcyon .....	First....	\$20 00
James R. Orr, Cedarville, O.....	Pride .....	Second..	10 00
Orrie Walter, Lebanon, O.....	Butterworth No. 8.....	.....	.....
Bull 2 Years Old and Under 3.			
Orrie Walter, Lebanon, O.....	Solomon .....	First....	20 00
J. S. Brown, Cedarville, O.....	Victor .....	Second..	10 00
W. H. Forbes, Clifton, O.....	Innorators Pride.....	.....	.....
Bull 1 Year Old and Under 2.			
James R. Orr, Cedarville, O.....	Dewey .....	First....	10 00
Same .....	Uneda .....	Second..	5 00
Bull Under 1 Year.			
James R. Orr, Cedarville, O.....	.....	First....	5 00
Same .....	.....	Second..	3 00
J. S. Brown, Cedarville, O.....	.....	.....	.....
Same .....	.....	.....	.....
W. H. Forbes, Clifton, O.....	.....	.....	.....
Same .....	.....	.....	.....
Cow 3 Years Old or Over.			
James R. Orr, Cedarville, O.....	Rena .....	First....	15 00
Same .....	Goldie .....	Second..	10 00
J. S. Brown, Cedarville, O.....	Elsie .....	.....	.....
Same .....	Isabelle .....	.....	.....
W. H. Forbes, Clifton, O.....	Minnie S.....	.....	.....
Same .....	Star .....	.....	.....
Cow or Heifer 2 Years Old and Under 3.			
James R. Orr, Cedarville, O.....	Rositla .....	First....	10 00
W. H. Forbes, Clifton, O.....	Nubin Ridge Queen.....	Second..	5 00
James R. Orr, Cedarville, O.....	Pearl .....	.....	.....
J. S. Brown, Cedarville, O.....	Lela .....	.....	.....
J. W. Pollock, Cedarville, O.....	Queen .....	.....	.....

## ENTRIES AND AWARDS.

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## POLLED JERSEYS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Heifer 1 Year Old and Under 2.</b>			
W. H. Forbes, Clifton, O.....	Bessie L.....	First....	10 00
James R. Orr, Cedarville, O.....	Bonny Blye.....	Second..	5 00
Same.....	Satita.....		
J. S. Brown, Cedarville, O.....	Challenge.....		
Same.....	Starlight.....		
W. H. Forbes, Clifton, O.....	Jennie.....		
<b>Heifer Under 1 Year.</b>			
James R. Orr, Cedarville, O.....		First....	5 00
Same.....		Second..	3 00
J. S. Brown, Cedarville, O.....			
Same.....			
W. H. Forbes, Clifton, O.....			
Same.....			

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>EXHIBITOR'S HERD.</b>			
Herd Owned by the Exhibitor.			
James R. Orr, Cedarville, O.....		First....	\$40 00
W. H. Forbes, Clifton, O.....			
<b>BREEDER'S HERDS.</b>			
Graded Herd.			
James R. Orr, Cedarville, O.....		First....	40 00
J. S. Brown, Cedarville, O.....			
Four Animals of Either Sex.			
James R. Orr, Cedarville, O.....		First....	30 00
J. S. Brown, Cedarville, O.....			

CLAYTON C. TAYLOR, Expert Judge.

## GUERNSEYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Bull 3 Years Old or Over.</b>			
L. V. Axtell, Perry, O.....	Dolley's Duke.....	First....	20 00
McCormick & Edgerly, Pataskala, O.....	Volunteer.....	Second..	10 00
<b>Bull 2 Years Old and Under 3.</b>			
L. V. Axtell, Perry, O.....	Prince of Homestead.....	First....	20 00
McCormick & Edgerly, Pataskala, O.....	Glendon.....	Second..	10 00
<b>Bull 1 Year Old and Under 2.</b>			
McCormick & Edgerly, Pataskala, O.....	Dexter.....	First....	10 00
L. V. Axtell, Perry, O.....	Teddy of Homestead.....	Second..	5 00
Same.....	La Pines Honor.....		

## AGRICULTURAL REPORT.

## GUERNSEYS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Bull Under 1 Year.</b>			
L. V. Axtell, Perry, O.....	Ovid of Homestead.....	First....	5 00
McCormick & Edgerly, Pataskala, O.....	Jacob .....	Second..	3 00
Same .....	Judah .....		
L. V. Axtell, Perry, O.....	Dewey of Riverside.....		
Same .....	Red Oak of Homestead....		
<b>Cow 3 Years Old or Over.</b>			
L. V. Axtell, Perry, O.....	My Lady Baltimore.....	First....	15 00
Same .....	Sally of the Fair.....	Second..	10 00
Same .....	Countess of Levelginn....		
McCormick & Edgerly, Pataskala, O.....	Daisy .....		
<b>Cow or Heifer 2 Years Old and Under 3.</b>			
L. V. Axtell, Perry, O.....	Isbinda .....	First....	10 00
McCormick & Edgerly, Pataskala, O.....	Fern K. ....	Second..	5 00
L. V. Axtell, Perry, O.....	Homestead Favorite.....		
<b>Heifer 1 Year Old and Under 2.</b>			
L. V. Axtell, Perry, O.....	Homestead Queen.....	First....	10 00
Same .....	Homestead Favorite II....	Second..	5 00
McCormick & Edgerly, Pataskala, O.....	Princess May.....		
Same .....	Princess Ida.....		
<b>Heifer Under 1 Year.</b>			
L. V. Axtell, Perry, O.....	Sallie of Homestead.....	First....	5 00
Same .....	Hermosa of Homestead....	Second..	3 00
Same .....	Carrie of Homestead.....		
McCormick & Edgerly, Pataskala, O.....	Princess Bess.....		
Same .....	Princess Pansy.....		

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>EXHIBITOR'S HERD.</b>			
<b>Herd Owned by Exhibitor.</b>			
L. V. Axtell, Perry, O.....	.....	First....	\$40 00
McCormick & Edgerly, Pataskala, O.....	.....		
<b>BREEDER'S HERDS.</b>			
<b>Graded Herd.</b>			
L. V. Axtell, Perry, O.....	.....	First....	40 00
McCormick & Edgerly, Pataskala, O.....	.....		
<b>Four Animals of Either Sex.</b>			
L. V. Axtell, Perry, O.....	.....	First....	80 00
McCormick & Edgerly, Pataskala, O.....	.....		

CLAYTON C. TAYLOR, Expert Judge.

## AYRSHIRES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Bull 3 Years Old or Over.</b>			
J. F. Converse, Woodville, N. Y.....	Jerry Drummond.....	First....	\$20 00
Howard Cook, Beloit, O.....	Leroy Jo Jo.....	Second..	10 00
J. P. Beatty, Pataskala, O.....	Carnit .....		
<b>Bull 2 Years Old and Under 3.</b>			
J. F. Converse, Woodville, N. Y.....	Riverside Duke.....	First....	20 00
J. P. Beatty, Pataskala, O.....	Chic .....	Second..	10 00
<b>Bull 1 Year Old and Under 2.</b>			
Howard Cook, Beloit, O.....		First....	10 00
J. F. Converse, Woodville, N. Y.....	Blind Bartimeus.....	Second..	3 00
J. P. Beatty, Pataskala, O.....	Monon .....		
<b>Bull Under 1 Year.</b>			
Howard Cook, Beloit, O.....	Beloit Ayer.....	First....	5 00
J. P. Beatty, Pataskala, O.....	Bidwell .....	Second..	3 00
Howard Cook, Beloit, O.....	Ayrlynn Duke.....		
J. F. Converse, Woodville, N. Y.....	Ossidines Duke.....		
Same .....	Lord Douglass of Riverside.....		
<b>Cow 3 Years Old or Over.</b>			
J. F. Converse, Woodville, N. Y.....	Gladys Drummond.....	First....	15 00
Howard Cook, Beloit, O.....	Kelley .....	Second..	10 00
Same .....	Pink Daisy.....		
J. P. Beatty, Pataskala, O.....	Sciota Lass.....		
Same .....	Nellie Lisle.....		
J. F. Converse, Woodville, N. Y.....	Josie Ossidine.....		
<b>Cow or Heifer 2 Years Old and Under 3.</b>			
J. P. Beatty, Pataskala, O.....	Buckeye Belle .....	First....	10 00
Same .....	Hassa .....	Second..	5 00
Howard Cook, Beloit, O.....	Inez Douglas.....		
Same .....	Ivy Nelson.....		
Same .....	Lilly Beloit.....		
J. F. Converse, Woodville, N. Y.....	Golden Roy.....		
Same .....	Daisy Ossidine.....		
<b>Heifer 1 Year Old and Under 2.</b>			
J. P. Beatty, Pataskala, O.....	Nugget .....	First....	10 00
Same .....	Primrose .....	Second..	5 00
Same .....	Mazeppa II.....		
Howard Cook, Beloit, O.....	Flo Douglas.....		
Same .....	Liah Nelson.....		
J. F. Converse, Woodville, N. Y.....	Riverside Lady.....		
Same .....	Riverside Girl.....		
<b>Heifer Under 1 Year.</b>			
J. P. Beatty, Pataskala, O.....	Hestums .....	First....	5 00
Same .....	Creola .....	Second..	3 00
Howard Cook, Beloit, O.....	Belle's Cherry .....		
Same .....	Valentina .....		
Same .....	Limet Nelson.....		
J. F. Converse, Woodville, N. Y.....	Gut Fern.....		
Same .....	Baby Carlton.....		

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>EXHIBITOR'S HERD.</b>			
Herd Owned by the Exhibitor.			
J. F. Converse, Woodville, N. Y.....		First....	\$40 00
J. P. Beatty, Pataskala, O.....			
Howard Cook, Beloit, O.....			
<b>BREEDER'S HERD.</b>			
Graded Herd.			
J. P. Beatty, Pataskala, O.....		First....	40 00
Howard Cook, Beloit, O.....			
J. F. Converse, Woodville, N. Y.....			
Four Animals of Either Sex.			
J. P. Beatty, Pataskala, O.....		First....	30 00
Howard Cook, Beloit, O.....			
J. F. Converse, Woodville, N. Y.....			

CLAYTON C. TAYLOR, Expert Judge.

## HOLSTEINS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Bull 3 Years Old or Over.</b>			
Easthope & Beery, Allegheny, Pa.....	Bernarde Clothilde.....	First....	\$30 00
W. B. Smith & Son, Columbus, O.....	Clothilde Netherland Pasha	Second..	10 00
H. H. Lakin, Marble Cliff, O.....	Prince of Wellington.....		
<b>Bull 2 Years Old and Under 2.</b>			
W. B. Smith & Son, Columbus, O.....	Sir Henry Yuno.....	First....	20 00
<b>Bull 1 Year Old and Under 2.</b>			
W. B. Smith & Son, Columbus, O.....	Mercides Statesman.....	First....	10 00
Easthope & Beery, Allegheny, Pa.....	Sir William Clothilde.....	Second..	5 00
Same.....	Sir Clothilde Aegis.....		
Same.....	Sir Clothilde Duke II.....		
<b>Bull Under 1 Year.</b>			
Easthope & Beery, Allegheny, Pa.....	Pieterbige Clothilde.....	First....	5 00
H. H. Lakin, Marble Cliff, O.....	Cracker Jack.....	Second..	3 00
W. B. Smith & Son, Columbus, O.....	Princess Penresa's Netherl'd		
Same.....	Miss Sharp's Paul De Kol.....		
Easthope & Beery, Allegheny, Pa.....	Lady Fay's Clothilde Prince		
Same.....	Aggie's Bernarde Clothilde.....		
<b>Cow 3 Years Old or Over.</b>			
W. B. Smith & Son, Columbus, O.....	Annual.....	First....	15 00
Same.....	Kate Spray.....	Second..	10 00
Easthope & Beery, Allegheny, Pa.....	Clothilde's Fancy.....		
Same.....	Zarilda II's Netherland.....		
Same.....	Madge Wildfire IV. Netherl.....		
<b>Cow or Heifer 2 Years Old and Under 3.</b>			
W. B. Smith & Son, Columbus, O.....	Jacob's Margaret III.....	First....	10 00
Easthope & Beery, Allegheny, Pa.....	Gem of Clothilde.....	Second..	5 00
Same.....	Rosa Clothilde Boon.....		
Same.....	Victoria Clothilde.....		
W. B. Smith & Son, Columbus, O.....	Inspiration.....		

## HOLSTEINS — Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Heifer 1 Year Old and Under 2.</b>			
W. B. Smith & Son, Columbus, O.....	Never Again.....	First....	10 00
Same.....	Cassie Clothilde Pasha.....	Second..	5 00
Easthope & Beery, Allegheny, Pa.....	Nina Clothilde.....		
Same.....	Lili Clothilde DeKol.....		
<b>Heifer Under 1 Year.</b>			
Easthope & Beery, Allegheny, Pa.....	Lady Fay's Aggie.....	First....	5 00
W. B. Smith & Son, Columbus, O.....	Kate Spray II.....	Second..	3 00
Same.....	Aggie Maximas Paulin.....		
Easthope & Beery, Allegheny, Pa.....	Netherland's Nina Clothilde.....		
Same.....	Clothilde's Aggie.....		
Same.....	Bernard's Lady Clothilde.....		

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>EXHIBITOR'S HERD.</b>			
Herd Owned by the Exhibitor.			
W. B. Smith & Son, Columbus, O.....		First....	\$40 00
Easthope & Beery, Allegheny, Pa.....			
<b>BREEDER'S HERDS.</b>			
Graded Herd.			
W. B. Smith & Son, Columbus, O.....		First....	40 00
Four Animals of Either Sex.			
W. B. Smith & Son, Columbus, O.....		First....	\$30 00
Easthope & Beery, Allegheny, Pa.....			

CLAYTON C. TAYLOR, Expert Judge.

## ABERDEEN ANGUS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Bull 8 Years Old or Over.</b>			
Thomas Matherson, Jr., South Charleston, O....	Gay Tad.....	First....	\$20 00
D. Bradfute & Son, Cedarville, O.....	Gay Erie.....	Second..	10 00
W. M. Sturgis, Mansfield, O.....	Trooper.....		
<b>Bull 1 Year Old and Under 2.</b>			
D. Bradfute & Son, Cedarville, O.....	Loman of Meadow Brook..	First....	10 00
<b>Bull Under 1 Year.</b>			
D. Bradfute & Son, Cedarville, O.....	Cap of Forest Mill.....	First....	5 00
W. M. Sturgis, Mansfield, O.....	Sturgis High Commissioner	Second..	3 00
Same.....	Sturgis Beau Midnight.....		

## ABERDEEN ANGUS — Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Cow 3 Years Old or Over.			
D. Bradfute & Son, Cedarville, O.....	Lady of Meadow Brook....	First....	15 00
Same .....	Lassie of Meadow Brook....	Second..	10 00
W. M. Sturgis, Mansfield, O.....	Queen Midnight.....		
Same .....	Queen Mary Bell.....		
Cow or Heifer 2 Years Old and Under 3.			
D. Bradfute & Son, Cedarville, O.....	Vanity of Meadow Brook....	First....	10 00
Same .....	Fancy of Meadow Brook....	Second..	5 00
W. M. Sturgis, Mansfield, O.....	Queen Mary Bell VI.....		
Same .....	Queen Ida Midnight.....		
Heifer 1 Year Old and Under 2. *			
D. Bradfute & Son, Cedarville, O.....	Fanny of Meadow Brook....	First....	10 00
Same .....	Violet of Meadow Brook....	Second..	5 00
W. M. Sturgis, Mansfield, O.....	Queen Mary Bell VII.....		
Heifer Under 1 Year.			
D. Bradfute & Son, Cedarville, O.....	Mabel of Meadow Brook....	First....	5 00
Same .....	Bess of Meadow Brook....	Second..	3 00
W. M. Sturgis, Mansfield, O.....	Sturgis Queen Mary Bell X		

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Herd Owned by Exhibitor.			
D. Bradfute & Son, Cedarville, O.....		First....	\$40 00
W. M. Sturgis, Mansfield, O.....			
BREEDER'S HERDS.			
Graded Herd.			
D. Bradfute & Son, Cedarville, O.....		First....	40 00
-Four Animals of Either Sex.			
D. Bradfute & Son, Cedarville, O.....		First....	30 00
W. M. Sturgis, Mansfield, O.....			

G. M. ROUDEBUAH, Expert Judge.

## GALLOWAYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 Years Old or Over.			
J. W. Byers, London, O.....	Sugarbottom .....	First....	\$30 00
Bull 1 Year Old and Under 2.			
J. W. Byers, London, O.....	Baby Boy.....	First....	10 00

## ENTRIES AND AWARDS.

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## GALLOWAYS — Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull Under 1 Year.			
J. W. Byers, London, O.....	Ben Boy.....	First....	5 00
Cow 3 Years Old or Over.			
J. W. Byers, London, O.....	Black Beauty.....	First....	15 00
Same .....	Young Carnation V.....	Second..	10 00
Cow or Heifer 2 Years Old and Under 3.			
J. W. Byers, London, O.....	Alice L.....	First....	10 00
Heifer 1 Year Old and Under 2.			
J. W. Byers, London, O.....	Young Beauty.....	First....	10 00
Same .....	Topsie .....	Second..	5 00
Heifer Under 1 Year.			
J. W. Byers, London, O.....	Dillie .....	First....	5 00
Same .....	Kate B.....	Second..	3 00

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Herd Owned by the Exhibitor.			
J. W. Byers, London, O.....	.....	First....	\$40 00
BREEDER'S HERDS.			
Graded Herd.			
J. W. Byers, London, O.....	.....	First....	40 00
Four Animals of Either Sex.			
J. W. Byers, London, O.....	.....	First....	20 00

G. M. ROUBESUSH, Expert Judge.

## RED POLLS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 Years Old or Over.			
Andrew & Bro., Cedarville, O.....	Gov. Bradley.....	First....	\$20 00
Bull 1 Year Old and Under 2.			
Andrew & Bro., Cedarville, O.....	Demon .....	First....	10 00



## RED POLLS — Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull Under 1 Year.			
Andrew & Bro., Cedarville, O.....	Amos .....	First....	5 00
Same .....	John Coffey.....	First....	3 00
Cow 3 Years Old or Over.			
Andrew & Bro., Cedarville, O.....	Haughty III.....	First....	15 00
Same .....	Nannette .....	Second..	10 00
Cow or Heifer 2 Years Old and Under 3.			
Andrew & Bro., Cedarville, O.....	Money .....	First....	10 00
Same .....	Beauty of Cedarville III....	Second..	5 00
Heifer 1 Year Old and Under 2.			
Andrew & Bro., Cedarville, O.....	Beauty II .....	First....	5 00
Same .....	Nannette II.....	Second..	5 00
Heifer Under 1 Year.			
Andrew & Bro., Cedarville, O.....	Beauty .....	First....	5 00
Same .....	.....	Second..	3 00

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Herd Owned by the Exhibitor.			
Andrew & Bro., Cedarville, O.....	.....	First....	\$40 00
BREEDER'S HERD.			
Graded Herd.			
Andrew & Bro., Cedarville, O.....	.....	First....	40 00
Four Animals of Either Sex.			
Andrew & Bro., Cedarville, O.....	.....	First....	30 00

G. W. HISKETT, Expert Judge.

## POLLED DURHAMS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 Years Old or Over.			
Wm. Tossey, Watkins, O.....	Hamilton Boy.....	First....	\$20 00
Stewart & Martz, Webster, O.....	Tippecanoe the IV.....	Second..	10 00
Bull 2 Years Old and Under 3.			
Wm. Tossey, Watkins, O.....	Polled Highland Duke.....	First....	20 00

## POLLED DURHAMS — Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Bull 1 Year Old and Under 2.</b>			
Wm. Tossey, Watkins, O.....	Young Fairfax.....	First....	18 00
Same .....	Dewey .....	Second..	5 00
<b>Bull Under 1 Year.</b>			
Stewart & Martz, Webster, O.....	Ottawa Sharon.....	First....	5 00
W. Clark, Kunkle, O.....	Tony .....	Second..	3 00
Wm. Tossey, Watkins, O.....	Young Carroll.....	.....	.....
<b>Cow 3 Years Old or Over.</b>			
Wm. Tossey, Watkins, O.....	Allie .....	First....	15 00
Stewart & Martz, Webster, O.....	Crimson Lonan.....	Second..	10 00
Same .....	Gladiolus .....	.....	.....
W. Clark, Kunkle, O.....	Bessie Sherman III.....	.....	.....
Same .....	Bessie Sherman IV.....	.....	.....
Wm. Tossey, Watkins, O.....	Beaty .....	.....	.....
<b>Cow or Heifer 2 Years Old and Under 3.</b>			
Wm. Tossey, Watkins, O.....	Daisy .....	First....	10 00
Stewart & Martz, Webster, O.....	.....	Second..	5 00
W. Clark, Kunkle, O.....	Bessie Sherman XXVIII..	.....	.....
Same .....	Blossom .....	.....	.....
Wm. Tossey, Watkins, O.....	Sallie .....	.....	.....
<b>Heifer 1 Year Old and Under 2.</b>			
Wm. Tossey, Watkins, O.....	Lady Duchess.....	First....	10 00
Stewart & Martz, Webster, O.....	Lady Ossil VII.....	Second..	5 00
Same .....	Lady Ossil VIII.....	.....	.....
W. Clark, Kunkle, O.....	Bessie Sherman IX.....	.....	.....
Same .....	Eastern Girl.....	.....	.....
Wm. Tossey, Watkins, O.....	Violet .....	.....	.....
<b>Heifer Under 1 Year.</b>			
Wm. Tossey, Watkins, O.....	Lady Hamilton.....	First....	5 00
W. Clark, Kunkle, O.....	Bibssom II.....	Second..	3 00
Same .....	Bessie Sherman II.....	.....	.....
Stewart & Martz, Webster, O.....	.....	.....	.....
Same .....	.....	.....	.....
Wm. Tossey, Watkins, O.....	Lady Duchess.....	.....	.....

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>EXHIBITOR'S HERD.</b>			
<b>Herd Owned by the Exhibitor.</b>			
Wm. Tossey, Watkins, O.....	.....	First....	\$40 00
Stewart & Martz, Webster, O.....	.....	.....	.....
<b>BREEDER'S HERD.</b>			
<b>Graded Herd.</b>			
Stewart & Martz, Webster, O.....	.....	.....	.....
W. Clark, Kunkle, O.....	.....	.....	.....
W. Tossey, Watkins, O.....	.....	First....	40 00
<b>Four Animals of Either Sex.</b>			
Stewart & Martz, Webster, O.....	.....	First....	40 00
W. Clark, Kunkle, O.....	.....	.....	.....
W. Tossey, Watkins, O.....	.....	.....	.....

G. W. HISKETT, Expert Judge.

## GRAND SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>DAIRY BREEDS.</b>			
<b>Herd.</b>			
L. V. Axtell, Perry, O.....	.....	First....	Silver
Howard Cook, Beloit, O.....	.....	.....	Cup
J. P. Beatty, Pataskala, O.....	.....	.....	.....
McCormick & Edgerly, Pataskala, O.....	.....	.....	.....
James R. Orr, Cedarville, O.....	.....	.....	.....
Easthope & Beery, Allegheny, Pa.....	.....	.....	.....
Ben Ames, Mt. Vernon, O.....	.....	.....	.....
J. F. Converse, Woodville, N. Y.....	.....	.....	.....
W. H. O'Goist, Girard, O.....	.....	.....	.....
Mrs. Jennie E. Hall, Columbus, O.....	.....	.....	.....
W. B. Smith & Son, Columbus, O.....	.....	.....	.....
<b>Bull 2 Years Old or Over.</b>			
Easthope & Biery, Allegheny, Pa.....	Bernarde Clothilde.....	First....	Medal
W. B. Smith & Son, Columbus, O.....	.....	.....	.....
Howard Cook, Beloit, O.....	.....	.....	.....
J. P. Beatty, Pataskala, O.....	.....	.....	.....
McCormick & Edgerly, Pataskala, O.....	.....	.....	.....
James R. Orr, Cedarville, O.....	.....	.....	.....
Ben Ames, Mt. Vernon, O.....	.....	.....	.....
Orrie Walter, Lebanon, O.....	Solomon.....	.....	.....
J. T. Converse, Woodville, N. Y.....	.....	.....	.....
L. V. Axtell, Perry, O.....	.....	.....	.....
W. H. O'Goist, Girard, O.....	.....	.....	.....
Mrs. Jennie E. Hall, Columbus, O.....	.....	.....	.....
<b>Bull Under 2 Years.</b>			
Howard Cook, Beloit, O.....	.....	First....	Medal
W. B. Smith & Son, Columbus, O.....	.....	.....	.....
J. P. Beatty, Pataskala, O.....	.....	.....	.....
James R. Orr, Cedarville, O.....	.....	.....	.....
Easthope & Beery, Allegheny, Pa.....	Sir William Clothilde.....	.....	.....
Same.....	Sir Clothilde's Aegis.....	.....	.....
Same.....	Sir Clothilde's Duke II.....	.....	.....
Ben Ames, Mt. Vernon, O.....	Sozius II.....	.....	.....
Ohio State University, Columbus, O.....	.....	.....	.....
J. F. Converse, Woodville, N. Y.....	.....	.....	.....
L. V. Axtell, Perry, O.....	.....	.....	.....
W. H. O'Goist, Girard, O.....	.....	.....	.....
Mrs. Jennie E. Hall, Columbus, O.....	.....	.....	.....
<b>Cow 2 Years Old or Over.</b>			
W. B. Smith & Son, Columbus, O.....	.....	First....	Medal
Howard Cook, Beloit, O.....	.....	.....	.....
J. P. Beatty, Pataskala, O.....	.....	.....	.....
McCormick & Edgerly, Pataskala, O.....	.....	.....	.....
James P. Orr, Cedarville, O.....	Clothilde's Fancy.....	.....	.....
Easthope & Beery, Allegheny, Pa.....	Zerilde II's Netherland.....	.....	.....
Same.....	Madge Wildfire IV's Nether.....	.....	.....
Same.....	Gem of Clothilde.....	.....	.....
Same.....	Etta Rock.....	.....	.....
Ben Ames, Mt. Vernon, O.....	.....	.....	.....
J. F. Converse, Woodville, N. Y.....	.....	.....	.....
L. V. Axtell, Perry, O.....	.....	.....	.....
James R. Orr, Cedarville, O.....	.....	.....	.....
W. H. O'Goist, Girard, O.....	.....	.....	.....
Mrs. Jennie E. Hall, Columbus, O.....	.....	.....	.....

## GRAND SWEEPSTAKES—Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Female Under 2 Years.			
W. H. O'Goist, Girard, O.....	.....	First....	Medal
W. B. Smith & Son, Columbus, O.....	.....	.....	.....
Howard Cook, Beloit, O.....	.....	.....	.....
J. P. Beatty, Pataskala, O.....	.....	.....	.....
James R. Orr, Cedarville, O.....	.....	.....	.....
Easthope & Beery, Allegheny, Pa.....	Daisy Nina Clothilde.....	.....	.....
Same.....	Lill Clothilde DeKol.....	.....	.....
Ben Ames, Mt. Vernon, O.....	Very Much More.....	.....	.....
J. F. Converse, Woodville, N. Y.....	.....	.....	.....
L. V. Axtell, Perry, O.....	.....	.....	.....
W. H. O'Goist, Girard, O.....	.....	.....	.....
W. H. Forbes, Clifton, O.....	Bessie L.....	.....	.....
Mrs. Jennie E. Hall, Columbus, O.....	.....	.....	.....

CLAYTON C. TAYLOR, Expert Judge.

## GRAND SWEEPSTAKES — Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>BEEF BREEDS.</b>			
Young Herd.			
D. Bradfute & Son, Cedarville, O.....	Colonel and herd.....	First....	Silver [cup
C. Hintz, Fremont, O.....			
John Hooker, New London, O.....	Bodonold II.....		
W. H. Curtice, Eminence, Ky.....			
Darling Bros., Nellie, O.....			
Andrew & Bro., Cedarville, O.....			
Bull 2 Years Old or Over.			
W. T. Miller & Sons, Carlos, Ind.....		First....	Medal
C. Hintz, Fremont, O.....			
W. M. Sturgis, Mansfield, O.....			
D. Bradfute & Son, Cedarville, O.....			
John Hooker, New London, O.....	Bodonold .....		
W. H. Curtice, Eminence, Ky.....			
Andrew & Bro., Cedarville, O.....			
Bull Under 2 Years.			
John Hooker, New London, O.....		First....	Medal
C. Hintz, Fremont, O.....			
W. M. Sturgis, Mansfield, O.....			
D. Bradfute & Son, Cedarville, O.....			
W. T. Miller & Sons, Carlos, Ind.....	Bodonold I.....		
W. H. Curtice, Eminence, Ky.....	" II.....		
Same .....	" III.....		
Darling Bros., Nellie, O.....			
Andrew & Bro., Cedarville, O.....			
Cow 2 Years Old or Over.			
W. T. Miller & Sons, Carlos, Ind.....		First....	Medal
C. Hintz, Fremont, O.....			
W. M. Sturgis, Mansfield, O.....			
D. Bradfute & Son, Cedarville, O.....			
John Hooker, New London, O.....			
Darling Bros., Nellie, O.....			
Andrew & Bro., Cedarville, O.....			
Same .....			
Female Under 2 Years.			
John Hooker, New London, O.....		First....	Medal
C. Hintz, Fremont, O.....			
W. M. Sturgis, Mansfield, O.....			
D. Bradfute & Son, Cedarville, O.....			
Same .....			
W. T. Miller & Sons, Carlos, Ind.....	Belle Donald I.....		
W. H. Curtice, Eminence, Ky.....	" II.....		
Same .....	" VII.....		
Same .....	" VIII.....		
John Hooker, New London, O.....	Peerless Queen III.....		
Darling Bros., Nellie, O.....			
Andrew & Bro., Cedarville, O.....			
Same .....			
Aged Herd.			
W. T. Miller & Sons, Carlos, Ind.....		First....	Silver [cup
D. Bradfute & Son, Cedarville, O.....			
John Hooker, New London, O.....			
C. Hintz, Fremont, O.....			
Andrew & Bro., Cedarville, O.....			
W. M. Sturgis, Mansfield, O.....			

G. W. HISKETT, GEORGE ALLEN, G. M. ROUDEBUSH, Expert Judges.

## OHIO STATE DAIRY TEST

BY STATE BOARD OF AGRICULTURE AND OHIO AGRICULTURAL EXPERIMENT  
STATION, 1899.

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The usual state dairy test conducted during the year, closing with the exhibit of cows at the State Fair, on September 7, marked one of the finest exhibits ever presented on the Ohio State Fair grounds. The number of cows tested and brought to the fair was at least double that of any preceding year, and the average quality was quite above previous exhibits.

During the year thirty-four animals were entered and tested, twenty-eight out of the thirty-four were in the show ring when the premiums were awarded. Twenty-three of these were Holsteins and five were Jerseys. Twenty-seven of the thirty-four cows entered made an average yield of a fraction above two pounds of butter fat per day. Five Holsteins, all tested the same day, made an average of two and one-fifth pounds of butter fat in twenty-four hours. Five Jerseys, all tested at one time, made an average of two and one-hundredths pounds of butter fat. With such a lot of cows as the above, all in sight at one time, one would truly say, "I never saw the like." It was a show that will not likely be duplicated soon again. These cows, as has been the custom in previous years, were tested by a representative from the Experiment Station, the milk weighed and sampled at the home of the cow, and the milk analyzed at the Experiment Station.

This test concludes the tenth year, and includes the test of one cow that has gone above any previous animal tested in Ohio; making 265 pounds of butter fat. The cow making this test had been sold, and was therefore not exhibited and could not compete for prize. The table given below shows points of interest, including name, breed and age of each cow tested, date of testing, date of last calf, total weight of milk given in twenty-four hours, per cent of butter fat, per cent of solids not fat, total pounds of fat, total pounds of solids not fat and per cent. of total solids: —

## OHIO STATE DAIRY TEST, 1899.

Name of cow.	Breed.	Age in years.	Last calf born.	Date of test.	Pounds of milk in 24 hours.	Per cent. fat.	Per cent. solids not fat.	Pounds butter fat in 24 hours.	Pounds solids not fat in 24 hours.	Total per cent. solids.
Nancy Dew Drop 2d Hollender	Holstein	4	Nov. 26, '98	Jan. 26, '99	61.37	.087	.084	5.31	5.19	12.24
Adventuress 3d	"	12	Oct. 30, '98	Jan. 26, '99	58.31	.088	.085	5.11	4.87	12.27
Kittie Clides 2d Coral	"	8	Dec. 26, '98	Jan. 26, '99	66.62	.039	.079	2.65	5.22	11.96
Wing Vergens	"	11	Jan. 9, '99	Jan. 26, '99	64.50	.034	.086	2.28	5.51	12.13
Princess Penrosa	"	10	Dec. 2, '98	Jan. 26, '99	57.00	.040	.082	2.28	4.67	12.29
Orrice	"	6	Dec. 7, '98	Jan. 26, '99	47.12	.088	.086	1.79	4.06	12.43
Leaffy	"	6	Jan. 9, '99	Jan. 26, '99	52.56	.039	.086	2.09	4.55	12.64
Nattie Maid	"	6	Jan. 4, '99	Feb. 27, '99	70.00	.038	.075	2.35	5.31	12.96
Ginger	"	4	Feb. 5, '99	Feb. 27, '99	78.50	.031	.077	2.46	6.09	10.90
We Repeat	"	4	Oct. 8, '98	Feb. 26, '99	43.75	.037	.069	1.51	3.85	11.96
Remittance	"	8	Oct. 31, '98	Feb. 24, '99	41.50	.029	.069	1.21	3.67	10.94
Gum Tulu	"	7	Oct. 27, '98	Feb. 25, '99	45.50	.038	.062	1.76	4.29	13.17
Harry's Gemaria	Jersey	8	Jan. 27, '99	Mar. 11, '99	24.31	.066	.079	1.60	1.92	14.56
Kamretta	"	8	Nov. 8, '98	Mar. 11, '99	29.25	.067	.091	1.96	2.67	15.85
Etta Rock	"	6	Dec. 21, '98	Mar. 11, '99	28.81	.068	.092	1.96	2.67	15.69
Ramapos Lassie	"	6	Nov. 29, '98	Mar. 11, '99	26.50	.074	.098	1.98	2.49	16.73
Luckey Ethel Rex	"	3	Jan. 10, '99	Mar. 11, '99	27.87	.056	.087	1.61	2.42	14.51
Bartlea	"	4	Feb. 17, '99	Mar. 11, '99	46.50	.055	.089	2.58	4.10	14.37
Pana	Holstein	6	Feb. 20, '99	Mar. 22, '99	80.87	.029	.076	2.37	6.20	10.54
Aaggie Maximo	"	13	Feb. 18, '99	Mar. 22, '99	62.43	.034	.083	2.14	5.29	12.76
Yu No	"	5	Nov. 26, '98	Mar. 22, '99	45.06	.036	.081	1.63	3.67	11.70
Tester	"	3	May 3, '98	Mar. 24, '99	40.62	.081	.065	1.39	3.49	11.69
Nieta 2d	"	5	Feb. 12, '99	Mar. 24, '99	52.31	.038	.083	1.76	4.36	11.69
Nancy Dew Drop 2d Aggie	"	3	April 3, '99	May 23, '99	46.75	.027	.077	1.27	3.69	10.49
Comos Aggie Beauty	"	5	April 4, '99	May 23, '99	53.75	.034	.083	1.91	4.65	11.79
Verbella May 3d	"	3	May 2, '99	May 23, '99	55.31	.031	.083	1.76	4.54	11.39
Payne's Lady Devries of Rochester	"	7	May 4, '99	May 19, '99	81.50	.029	.076	2.36	6.25	10.50
Miss Sharp	"	4	June 30, '99	July 26, '99	49.06	.038	.079	1.83	3.93	11.70
Inspiration	"	3	June 7, '99	July 23, '99	39.43	.032	.076	1.26	3.02	10.80
Never Again	"	2	June 9, '99	July 23, '99	32.81	.031	.078	1.01	2.88	10.90
Gretta Thorne 3d	"	6	June 12, '99	July 23, '99	46.62	.035	.070	1.64	3.30	10.59
Marglyn 2d	"	4	July 14, '99	Aug. 18, '99	52.81	.028	.078	1.49	4.14	10.69
Ideal Hildergisela	"	3	July 22, '99	Aug. 18, '99	57.00	.030	.085	1.72	4.93	11.59
Annual	"	7	Aug. 10, '99	Aug. 17, '99	60.93	.034	.079	2.62	4.85	11.39

The above table shows twenty-eight Holsteins and six Jerseys. The Holsteins were all owned by W. B. Smith & Son of Columbus, Ohio, and the Jerseys by Ben Ames of Mt. Vernon, Ohio.

The first premium offered for each of the breeds was a silver cup for the largest yield of fat from twenty-four hours' milk. For the Holstein breed the cow Annual carried off first with 2.62 pounds of butter fat, while Bartlea secured a like prize for the Jerseys with 2.58 pounds butter fat, falling only four hundredths of one pound behind the Holstein.

The first premium offered for each of the breeds was a silver medal for largest yields of solids, not including fat. The cow Payne's Lady Devries of Rochester, bore off the ribbon for the Holstein herd with 6.43 pounds solids not fat, and the cow Bartlea carried off the ribbon for the Jerseys with a yield of 4.1 pounds solids not fat.

#### CHAMPIONSHIP CLASS.

The rule here provides for a championship cup, for the cow of any breed, making the largest amount of butter fat and largest amount of solids, not fat, in the above test. No one cow excelled in all these requirements but Payne's Lady Devries, of Rochester scored successfully for this feature in solids not fat, and came within eight one-hundredths of securing it on butter fat, it was therefore recommended that she be awarded the championship cup.

#### GRAND SWEEPSTAKES.

Provision is made for a grand sweepstake plate to the herd of five cows, tested at one time belonging to one herd and owned by one breeder, producing the largest amount of butter fat and largest amount of solids, not fat. This plate was awarded to a herd of five cows owned by W. B. Smith & Son. The following cows were included: — Nancy Dew Drop 2nd Hollender, Adventuress 3rd, Wing Vergens, Princess Penrosa and Leaffy: the total yield was eleven and one-hundredths pounds of butter fat and 24.88 pounds solids not fat, or an average of 2.20 pounds butter fat and 4.97 pounds solids not fat.

The Holstein cow Annual, was awarded a silver medal, engraved and encased, for producing the greatest amount of butter fat, 2.62 pounds.

The Holstein cow Payne's Lady Devries of Rochester, was awarded a silver medal, engraved and encased, for largest production of solids not fat, 6.43 pounds.

A like prize was awarded Lady Paynes Devries of Rochester, for the largest amount of milk produced in twenty-four hours, and analyzing not less than .03 butter fat — amount produced, 83.87 pounds

Respectfully submitted,

FREMONT HICKMAN,

Tester.



## SHEEP—G. LIGGETT, Member in Charge.

## MERINOS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 Years Old or Over.			
F. W. Perkins, West Mansfield, O.....	.....	First....	\$10 00
S. Blamer & Son, Johnstown, O.....	.....	Second..	5 00
John Vogel, Jr., Chicago, O.....	.....	.....	.....
J. Lovett & Sons, Quincy, O.....	McKinley	.....	.....
R. D. Williamson, Xenia, O.....	Quality	.....	.....
Same	Monroe II	.....	.....
John Vogel, Jr., Chicago, O.....	.....	.....	.....
S. Blamer & Son, Johnstown, O.....	.....	.....	.....
J. M. Flanagan, Springfield, O.....	.....	.....	.....
Ram 1 Year Old and Under 2.			
S. Blamer & Son, Johnstown, O.....	.....	First....	10 00
Same	.....	Second..	5 00
John Vogel, Jr., Chicago, O.....	.....	.....	.....
J. Lovett & Sons, Quincy, O.....	.....	.....	.....
Same	.....	.....	.....
Same	.....	.....	.....
Wesley Bishop, Troyton, O.....	.....	.....	.....
Same	.....	.....	.....
C. H. Bell, Ashley, O.....	.....	.....	.....
Ram Under 1 Year.			
S. Blamer & Son, Johnstown, O.....	.....	First....	5 00
R. D. Williamson, Xenia, O.....	.....	Second..	3 00
F. W. Perkins, West Mansfield, O.....	.....	.....	.....
John Vogel, Jr., Chicago, O.....	.....	.....	.....
R. D. Williamson, Xenia, O.....	.....	.....	.....
J. M. Flanagan, Springfield, O.....	.....	.....	.....
Ewe 2 Years Old or Over.			
R. D. Williamson, Xenia, O.....	.....	First....	10 00
S. Blamer & Son, Johnstown, O.....	.....	Second..	5 00
F. W. Perkins, West Mansfield, O.....	.....	.....	.....
Same	.....	.....	.....
Same	.....	.....	.....
John Vogel, Jr., Chicago, O.....	.....	.....	.....
S. Lovett & Sons, Quincy, O.....	.....	.....	.....
R. D. Williamson, Xenia, O.....	.....	.....	.....
J. M. Flanagan, Springfield, O.....	.....	.....	.....
Ewe 1 Year Old and Under 2.			
R. D. Williamson, Xenia, O.....	.....	First....	10 00
John Vogel, Jr., Chicago, O.....	.....	Second..	5 00
J. Lovett & Sons, Quincy, O.....	.....	.....	.....
R. D. Williamson, Xenia, O.....	.....	.....	.....
S. Blamer & Son, Johnstown, O.....	.....	.....	.....
Same	.....	.....	.....
J. M. Flanagan, Springfield, O.....	.....	.....	.....
F. W. Perkins, West Mansfield, O.....	.....	.....	.....
Ewe Under 1 Year.			
S. Blamer & Son, Johnstown, O.....	.....	First....	5 00
R. D. Williamson, Xenia, O.....	.....	Second..	3 00
F. W. Perkins, West Mansfield, O.....	.....	.....	.....
Same	.....	.....	.....
John Vogel, Jr., Chicago, O.....	.....	.....	.....
R. D. Williamson, Xenia, O.....	.....	.....	.....
Same	.....	.....	.....
C. H. Bell, Ashley, O.....	.....	.....	.....

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock.			
R. D. Williamson, Xenia, O.....	.....	First....	\$15 00
F. W. Perkins, West Mansfield, O.....	.....	.....	.....
S. Blamer & Son, Johnstown, O.....	.....	.....	.....
J. M. Flanagan, Springfield, O.....	.....	.....	.....
Pen of 4 Lambs.			
R. D. Williamson, Xenia, O.....	.....	First....	15 00
S. Blamer & Son, Johnstown, O.....	.....	.....	.....

GEO. S. THOMAS, Judge, Greenwich, O.

## DELAINE MERINOS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 Years Old or Over.			
C. S. Chapman & Son, Marysville, O.....	Keystone .....	First....	\$10 00
S. Blamer & Son, Johnstown, O.....	.....	Second..	5 00
Wm. Berry, Clokey, Pa.....	.....	.....	.....
Same .....	.....	.....	.....
J. M. Flanagan, Springfield, O.....	.....	.....	.....
Wilson Bros., Frederickstown, O.....	.....	.....	.....
Ram 1 Year Old and Under 2.			
A. T. Gamber, Weston, Mich.....	.....	First....	10 00
C. S. Chapman & Son, Marysville, O.....	.....	Second..	5 00
Wm. Berry, Clokey, Pa.....	.....	.....	.....
Same .....	.....	.....	.....
C. S. Chapman & Son, Marysville, O.....	.....	.....	.....
Same .....	.....	.....	.....
Same .....	.....	.....	.....
J. M. Flanagan, Springfield, O.....	.....	.....	.....
Wilson Bros., Frederickstown, O.....	.....	.....	.....
A. T. Gamber, Weston, Mich.....	.....	.....	.....
Ram Under 1 Year.			
A. T. Gamber, Weston, Mich.....	.....	First....	5 00
C. S. Chapman & Son, Marysville, O.....	.....	Second..	3 00
Wm. Berry, Clokey, Pa.....	.....	.....	.....
Same .....	.....	.....	.....
C. S. Chapman & Son, Marysville, O.....	.....	.....	.....
Wilson Bros., Frederickstown, O.....	.....	.....	.....
C. H. Bell, Ashley, O.....	.....	.....	.....
A. T. Gamber, Weston, Mich.....	.....	.....	.....
Same .....	.....	.....	.....
Ewe 2 Years Old or Over.			
C. S. Chapman & Son, Marysville, O.....	.....	First....	10 00
A. T. Gamber, Weston, Mich.....	.....	Second..	5 00
Wm. Berry, Clokey, Pa.....	.....	.....	.....
Same .....	.....	.....	.....
C. S. Chapman & Son, Marysville, O.....	.....	.....	.....
Same .....	.....	.....	.....
S. Blamer & Son, Johnstown, O.....	.....	.....	.....
J. M. Flanagan, Springfield, O.....	.....	.....	.....
R. D. Williamson, Xenia, O.....	.....	.....	.....
Wilson Bros., Frederickstown, O.....	.....	.....	.....
A. T. Gamber, Weston, Mich.....	.....	.....	.....

## DELAINE MERINOS — Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ewe 1 Year Old and Under 2.			
A. T. Gamber, Weston, Mich.....	.....	First....	10 00
C. S. Chapman & Son, Marysville, O.....	.....	Second..	5 00
Wm. Berry, Clokey, Pa.....	.....		
Same.....	.....		
C. S. Chapman & Son, Marysville, O.....	.....		
S. Blamer & Son, Johnstown, O.....	.....		
Wilson Bros., Fredericktown, O.....	.....		
A. T. Gamber, Weston, Mich.....	.....		
Ewe Under 1 Year.			
C. S. Chapman & Son, Marysville, O.....	.....	First....	5 00
A. T. Gamber, Weston, Mich.....	.....	Second..	3 00
Wm. Berry, Clokey, Pa.....	.....		
Same.....	.....		
C. S. Chapman & Son, Marysville, O.....	.....		
S. Blamer & Son, Johnstown, O.....	.....		
J. M. Flanagan, Springfield, O.....	.....		
R. D. Williamson, Xenia, O.....	.....		
C. H. Bell, Ashley, O.....	.....		
A. T. Gamber, Weston, Mich.....	.....		
Same.....	.....		

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock.			
A. T. Gamber, Weston, Mich.....	.....	First....	\$15 00
Wm. Berry, Clokey, Pa.....	.....		
C. S. Chapman & Son, Marysville, O.....	.....		
S. Blamer & Son, Johnstown, O.....	.....		
Pen of 4 Lambs.			
A. T. Gamber, Weston, Mich.....	.....	First....	15 00
Wm. Berry, Clokey, Pa.....	.....		
C. S. Chapman & Son, Marysville, O.....	.....		

U. C. Brouse, Judge, Kendallville, Ind.

## FRENCH MERINOS — RAMBOUILLET.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 Years Old or Over.			
D. Lincoln, Milford Center, O.....	.....	First....	\$10 00
Shaw & Bader, Marits, O.....	Herman 576 .....	Second..	5 00
D. Lincoln, Milford Center, O.....	.....	.....	.....
Ram 1 Year Old and Under 2.			
Shaw & Bader, Marits, O.....	S. & B. 115.....	First....	10 00
D. Lincoln, Milford Center, O.....	.....	Second..	5 00
Same .....	.....	.....	.....
Same .....	.....	.....	.....
Ram Under 1 Year.			
D. Lincoln, Milford Center, O.....	.....	First....	5 00
Shaw & Bader, Marits, O.....	S. & B. 198.....	Second..	3 00
D. Lincoln, Milford Center, O.....	.....	.....	.....
Ewe 2 Years Old or Over.			
D. Lincoln, Milford Center, O.....	.....	First....	10 00
Same .....	.....	Second..	5 00
Same .....	.....	.....	.....
Shaw & Bader, Marits, O.....	S. & B. 67.....	.....	.....
Ewe 1 Year Old and Under 2.			
D. Lincoln, Milford Center, O.....	.....	First....	10 00
Same .....	.....	Second..	5 00
Same .....	.....	.....	.....
Same .....	.....	.....	.....
Shaw & Bader, Marits, O.....	S. & B. 97.....	.....	.....
Ewe Under 1 Year.			
D. Lincoln, Milford Center, O.....	.....	First....	5 00
Shaw & Bader, Marits, O.....	S. & B. 170.....	Second..	3 00
D. Lincoln, Milford Center, O.....	.....	.....	.....

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock.			
D. Lincoln, Milford Center, O.....	.....	First....	\$15 00
Shaw & Bader, Marits, O.....	.....	.....	.....
Pen of 4 Lambs.			
Shaw & Bader, Marits, O.....	.....	First....	15 00
D. Lincoln, Milford Center, O.....	.....	.....	.....

U. C. BRONX, Judge, Kendallville, Ind.

## COTSWOLDS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Ram 2 Years Old or Over.</b>			
Wm. Hintz, Fremont, O.....	R. P. Snells 166.....	First....	\$10 00
Wilson Bros., Muncie, Ind.....		Second..	5 00
Wm. Hintz, Fremont, O.....	Samson 60.....		
S. G. Millard, Huntsburgh, O.....			
D. B. Watt & Son, Xenia, O.....			
<b>Ram 1 Year Old and Under 2.</b>			
Wilson Bros., Muncie, Ind.....		First....	10 00
D. B. Watt & Son, Xenia, O.....		Second..	5 00
Wm. Hintz, Fremont, O.....	Duke of Clyde 66.....		
Same	Dewey 71.....		
S. G. Millard, Huntsburgh, O.....			
Wilson Bros., Muncie, Ind.....			
<b>Ram Under 1 Year.</b>			
J. H. Woodford, Muncie, Ind.....		First....	5 00
S. G. Millard, Huntsburgh, O.....		Second..	3 00
John Andregg, Basil, O.....			
Wm. Hintz, Fremont, O.....	Lord Welton 79.....		
Same	Rawlings 473.....		
J. H. Woodford, Muncie, Ind.....			
D. B. Watt & Son, Xenia, O.....			
<b>Ewe 2 Years Old or Over.</b>			
Wilson Bros., Muncie, Ind.....		First....	10 00
D. B. Watt & Son, Xenia, O.....		Second..	5 00
Wm. Hintz, Fremont, O.....	Spring Lawn Lass 601.....		
Same	Gold Medal 38.....		
S. G. Millard, Huntsburgh, O.....			
Wilson Bros., Muncie, Ind.....			
<b>Ewe 1 Year Old and Under 2.</b>			
Wilson Bros., Muncie, Ind.....		First....	10 00
S. G. Millard, Huntsburgh, O.....		Second..	5 00
Wm. Hintz, Fremont, O.....	Eliza C. 70.....		
Same	Fanny S. 66.....		
Wilson Bros., Muncie, Ind.....			
<b>Ewe Under 1 Year.</b>			
J. H. Woodford, Muncie, Ind.....		First....	5 00
S. G. Millard, Huntsburgh, O.....		Second..	3 00
Wm. Hintz, Fremont, O.....	Rawlings 487.....		
Same	" 497.....		
S. G. Millard, Huntsburgh, O.....			
J. H. Woodford, Muncie, Ind.....			
D. B. Watt & Son, Xenia, O.....			

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Flock.</b>			
Wilson Bros., Muncie, Ind.....		First....	\$15 00
S. G. Millard, Huntsburgh, O.....			
D. B. Watt & Son, Xenia, O.....			
<b>Pen of 4 Lambs.</b>			
J. H. Woodford, Muncie, Ind.....		First....	15 00
D. B. Watt & Son, Xenia, O.....			

## ENTRIES AND AWARDS.

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## COTSWOLDS—Concluded.

Special Offer by American Cotswold Record Co.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Best Flock of 1 Ram and 4 Ewes.</b>			
Wilson Bros., Muncie, Ind.....	.....	First....	.....
Wm. Hintz, Fremont, O.....	.....	.....	.....
S. G. Millard, Huntsburgh, O.....	.....	.....	.....
<b>Best Pen of 4 Lambs.</b>			
J. H. Woodford, Muncie, Ind.....	.....	.....	.....
D. B. Watt & Son, Xenia, O.....	.....	.....	.....
JOHN L. THOMPSON, Judge, Gas City, Ind.			

## OXFORD DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Ram 2 Years Old or Over.</b>			
R. J. Stone, Stonington, Ill.....	.....	First....	\$10 00
J. C. Williamson, Xenia, O.....	.....	Second..	5 00
John Andregg, Basil, O.....	Beldows Donaveth.....	.....	.....
W. & J. R. Heskett, Fulton, O.....	.....	.....	.....
Eugene Sites, Elyria, O.....	Belckins Hobart.....	.....	.....
<b>Ram 1 Year Old and Under 2.</b>			
R. J. Stone, Stonington, Ill.....	.....	First....	10 00
W. & J. R. Heskett, Fulton, O.....	.....	Second..	5 00
N. W. Heskett, Fulton, O.....	Brant Chief.....	.....	.....
George Allen, Allerton, Ill.....	.....	.....	.....
John Andregg, Basil, O.....	Andregg's 207 .....	.....	.....
R. J. Stone, Stonington, Ill.....	.....	.....	.....
J. C. Williamson, Xenia, O.....	.....	.....	.....
<b>Ram Under 1 Year.</b>			
John Andregg, Basil, O.....	Andregg's 214 .....	First....	5 00
J. C. Williamson, Xenia, O.....	.....	Second..	3 00
N. W. Heskett, Fulton, O.....	.....	.....	.....
George Allen, Allerton, Ill.....	.....	.....	.....
John Andregg, Basil, O.....	.....	.....	.....
R. J. Stone, Stonington, Ill.....	.....	.....	.....
Same .....	.....	.....	.....
W. & J. R. Heskett, Fulton, O.....	.....	.....	.....
<b>Ewe 2 Years Old or Over.</b>			
R. J. Stone, Stonington, Ill.....	.....	First....	10 00
Same .....	.....	Second..	5 00
John Andregg, Basil, O.....	Arkells 1078 .....	.....	.....
J. C. Williamson, Xenia, O.....	.....	.....	.....
<b>Ewe 1 Year Old and Under 2.</b>			
R. J. Stone, Stonington, Ill.....	.....	First....	10 00
Same .....	.....	Second..	5 00
J. C. Williamson, Xenia, O.....	Andregg's 206 .....	.....	.....
John Andregg, Basil, O.....	.....	.....	.....
W. & J. R. Heskett, Fulton, O.....	.....	.....	.....
<b>Ewe Under 1 Year.</b>			
R. J. Stone, Stonington, Ill.....	.....	First....	5 00
Same .....	.....	Second..	3 00
John Andregg, Basil, O.....	Andregg's 209 .....	.....	.....
W. & J. R. Heskett, Fulton, O.....	.....	.....	.....
J. C. Williamson, Xenia, O.....	.....	.....	.....
Same .....	.....	.....	.....

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Flock.</b>			
R. J. Stone, Stonington, Ill.....	.....	First....	\$15 00
J. C. Williamson, Xenia, O.....	.....	Second....	.....
<b>Pen of 4 Lambs.</b>			
J. C. Williamson, Xenia, O.....	.....	First....	15 00
John Andregg, Basil, O.....	.....	Second....	.....
R. J. Stone, Stonington, Ill.....	.....	.....	.....

## Special Offer by the American Oxford Down Record Association.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Yearling Ram.</b>			
John Andregg, Basil, O.....	.....	First....	.....
J. C. Williamson, Xenia, O.....	.....	Second....	.....
W. & J. R. Heskett, Fulton, O.....	.....	.....	.....
<b>Yearling Ewe.</b>			
J. C. Williamson, Xenia, O.....	.....	First....	.....
Same.....	.....	Second....	.....
W. & J. R. Heskett, Fulton, O.....	.....	.....	.....
John Andregg, Basil, O.....	.....	.....	.....
N. W. Heskett, Fulton, O.....	.....	.....	.....
<b>Pen of 4 Lambs of Either Sex</b>			
J. C. Williamson, Xenia, O.....	.....	First....	.....
N. W. Heskett, Fulton, O.....	.....	Second....	.....
John Andregg, Basil, O.....	.....	.....	.....

JOHN L. THOMPSON, Judge, Gas City, Ind.

## SHROPSHIRE DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Ram 2 Years Old or Over.</b>			
George Allen, Allerton, Ill.....	.....	First....	\$10 00
G. H. Davison, Millbrook, N. Y.....	.....	Second....	5 00
George Allen, Allerton, Ill.....	.....	.....	.....
G. H. Davison, Millbrook, N. Y.....	.....	.....	.....
H. W. Chaffee, Brecksville, O.....	.....	.....	.....
C. W. O'Harra, Galloway, O.....	.....	.....	.....
<b>Ram 1 Year Old and Under 2.</b>			
George Allen, Allerton, Ill.....	.....	First....	10 00
G. H. Davison, Millbrook, N. Y.....	.....	Second....	5 00
George Allen, Allerton, Ill.....	.....	.....	.....
G. H. Davison, Millbrook, N. Y.....	.....	.....	.....
H. W. Chaffee, Brecksville, O.....	Kent's 50	.....	.....
F. Plessinger & Bro., Beamsville, O.....	.....	.....	.....
Same.....	.....	.....	.....

## SHROPSHIRE DOWNS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram Under 1 Year.			
George Allen, Allerton, Ill.....	.....	First....	5 00
Same.....	.....	Second..	3 00
G. H. Davison, Millbrook, N. Y.....	.....	.....	.....
Same.....	.....	.....	.....
H. W. Chaffee, Brecksville, O.....	.....	.....	.....
C. W. O'Harra, Galloway, O.....	.....	.....	.....
Ewe 2 Years Old or Over.			
George Allen, Allerton, Ill.....	.....	First....	10 00
G. H. Davison, Millbrook, N. Y.....	.....	Second..	5 00
Same.....	.....	.....	.....
H. W. Chaffee, Brecksville, O.....	.....	.....	.....
Ewe 1 Year Old and Under 2.			
George Allen, Allerton, Ill.....	.....	First....	10 00
G. H. Davison, Millbrook, N. Y.....	.....	Second..	5 00
George Allen, Allerton, Ill.....	.....	.....	.....
G. H. Davison, Millbrook, N. Y.....	.....	.....	.....
T. W. Davison, Mechanicsburg, O.....	.....	.....	.....
H. W. Chaffee, Brecksville, O.....	.....	.....	.....
Ewe Under 1 Year.			
George Allen, Allerton, Ill.....	.....	First....	5 00
Same.....	.....	Second..	3 00
G. H. Davison, Millbrook, N. Y.....	.....	.....	.....
Same.....	.....	.....	.....
H. W. Chaffee, Brecksville, O.....	.....	.....	.....

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock.			
George Allen, Allerton, Ill.....	.....	First....	\$15 00
G. H. Davison, Millbrook, N. Y.....	.....	.....	.....
H. W. Chaffee, Brecksville, O.....	.....	.....	.....
Pen of 4 Lambs.			
H. W. Chaffee, Brecksville, O.....	.....	First....	15 00
George Allen, Allerton, Ill.....	.....	.....	.....
G. H. Davison, Millbrook, N. Y.....	.....	.....	.....



## Special Offer by the American Shropshire Registry Association.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock 1 Ram and 3 Ewes.			
H. W. Chaffee, Brecksville, O.....	.....	First....	.....
George Allen, Allerton, Ill.....	.....	.....	.....
G. H. Davison, Millbrook, N. Y.....	.....	.....	.....
Flock 4 Lambs, 1 Ram and 3 Ewes.			
H. W. Chaffee, Brecksville, O.....	.....	First....	.....

JOHN L. THOMPSON, Judge, Gas City, Ind.

## HAMPSHIRE DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 Years Old or Over.			
Scarff & Artz, New Carlisle, O.....	.....	First....	\$10 00
Same .....	.....	Second..	5 00
Ram 1 Year Old and Under 2.			
T. L. Springer, Jeromeville, O.....	.....	First....	10 00
Scarff & Artz, New Carlisle, O.....	.....	Second..	5 00
Same .....	.....	.....	.....
Ram Under 1 Year.			
Scarff & Artz, New Carlisle, O.....	.....	First....	5 00
T. L. Springer, Jeromeville, O.....	.....	Second..	3 00
Ewe 2 Years Old or Over.			
Scarff & Artz, New Carlisle, O.....	.....	First....	10 00
T. L. Springer, Jeromeville, O.....	.....	Second..	5 00
Scarff & Artz, New Carlisle, O.....	.....	.....	.....
Ewe 1 Year Old and Under 2.			
T. L. Springer, Jeromeville, O.....	.....	First....	10 00
Scarff & Artz, New Carlisle, O.....	.....	Second..	5 00
Same .....	.....	.....	.....
Ewe Under 1 Year.			
T. L. Springer, Jeromeville, O.....	.....	First....	5 00
Scarff & Artz, New Carlisle, O.....	.....	Second..	3 00
Same .....	.....	.....	.....

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock.			
Scarff & Artz, New Carlisle, O.....	.....	First....	\$15 00
Pen of 4 Lambs.			
Scarff & Artz, New Carlisle, O.....	.....	First....	15 00

## Special Offer by the Hampshire Downs Breeders' Association.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Pen of 4 Lambs.			
Scarff & Artz, New Carlisle, O.....	.....	First....	.....
T. L. Springer, Jeromeville, O.....	.....	Second..	.....

JOHN L. THOMPSON, Judge, Gas City, Ind.

## SOUTH DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 Years Old or Over.			
C. C. Shaw & Son, Newark, O.....	Shaw 75 .....	First....	\$10 00
George Allen, Allerton, Ill.....	.....	Second..	5 00
W. H. Compton, Monroe, O.....	Dandy C .....	.....	.....
C. C. Shaw & Son, Newark, O.....	Chichester King XIII.....	.....	.....
R. C. Watt, Cedarville, O.....	.....	.....	.....
Ram 1 Year Old and Under 2.			
George Allen, Allerton, Ill.....	.....	First....	10 00
R. C. Watt, Cedarville, O.....	.....	Second..	5 00
W. H. Compton, Monroe, O.....	W. H. C. 97.....	.....	.....
Same .....	W. H. C. 81.....	.....	.....
C. C. Shaw & Son, Newark, O.....	.....	.....	.....
R. C. Watt, Cedarville, O.....	Simonton 21 .....	.....	.....
Ram Under 1 Year.			
George Allen, Allerton, Ill.....	.....	First....	5 00
C. C. Shaw & Son, Newark, O.....	Simonton 24 .....	Second..	3 00
W. H. Compton, Monroe, O.....	.....	.....	.....
C. C. Shaw & Son, Newark, O.....	Shaw 204 .....	.....	.....
R. C. Watt, Cedarville, O.....	.....	.....	.....
Ewe 2 Years Old or Over.			
George Allen, Allerton, Ill.....	.....	First....	10 00
R. C. Watt, Cedarville, O.....	.....	Second..	5 00
Same .....	.....	.....	.....
W. H. Compton, Monroe, O.....	Compton 52 .....	.....	.....
C. C. Shaw & Son, Newark, O.....	.....	.....	.....

## SOUTH DOWNS — Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ewe 1 Year Old and Under 2.			
George Allen, Allerton, Ill.....		First....	10 00
R. C. Watt, Cedarville, O.....		Second..	5 00
W. H. Compton, Monroe, O.....	Compton 80		
Same	Compton 78		
C. C. Shaw & Son, Newark, O.....	Shaw 174		
R. C. Watt, Cedarville, O.....			
Ewe Under 1 Year.			
George Allen, Allerton, Ill.....		First....	5 00
R. C. Watt, Cedarville, O.....		Second..	3 00
W. H. Compton, Monroe, O.....	Shaw 202		
C. C. Shaw & Son, Newark, O.....	" 203		
Same			
R. C. Watt, Cedarville, O.....			

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock.			
C. C. Shaw & Son, Newark, O.....		First....	\$15 00
W. H. Compton, Monroe, O.....			
Scarff & Artz, New Carlisle, O.....			
Pen of 4 Lambs.			
C. C. Shaw & Son, Newark, O.....		First....	15 00

## Special Offer by the American South Down Breeders' Association.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Pen of 4 Lambs.			
C. C. Shaw & Son, Newark, O.....		First....	

JOHN L. THOMPSON, Judge, Gas City, Ind.

## ENTRIES AND AWARDS.

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## LINCOLNS AND LEICESTERS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 Years Old or Over.			
J. R. Bickett, Xenia, O.....	.....	First....	\$10 00
Ram 1 Year Old and Under 2.			
J. R. Bickett, Xenia, O.....	.....	First....	10 00
Ram Under 1 Year.			
J. R. Bickett, Xenia, O.....	.....	First....	5 00
Same .....	.....	Second..	3 00
Ewe 2 Years Old and Over.			
J. R. Bickett, Xenia, O.....	.....	First....	10 00
Same .....	.....	Second..	5 00
Ewe 1 Year Old and Under 2.			
J. R. Bickett, Xenia, O.....	.....	First....	10 00
Same .....	.....	Second..	5 00
Ewe Under 1 Year.			
J. R. Bickett, Xenia, O.....	.....	First....	5 00
Same .....	.....	Second..	3 00

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock.			
J. R. Bickett, Xenia, O.....	.....	First....	\$15 00
Pen of 4 Lambs.			
J. R. Bickett, Xenia, O.....	.....	First....	15 00

JOHN L. THOMPSON, Judge, Gas City, Ind.

## DORSET HORNED.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 Years Old or Over.			
J. L. Henderson & Son, Washington, Pa.....	.....	.....	.....
Ram 1 Year Old and Under 2.			
J. L. Henderson & Son, Washington, Pa.....	.....	First....	\$10 00
Same .....	.....	Second..	5 00
Ram Under 1 Year.			
J. L. Henderson & Son, Washington, Pa.....	.....	First....	5 00
Same .....	.....	Second..	3 00

## AGRICULTURAL REPORT.

## DORSET HORNED—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ewe 2 Years Old or Over.			
J. L. Henderson & Son, Washington, Pa.....	.....	First....	10 00
Same .....	.....	Second..	5 00
Ewe 1 Year Old and Under 2.			
J. L. Henderson & Son, Washington, Pa.....	.....	First....	10 00
Same .....	.....	Second..	5 00
Ewe Under 1 Year.			
J. L. Henderson & Son, Washington, Pa.....	.....	First....	5 00
Same .....	.....	Second..	3 00

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock.			
J. L. Henderson & Son, Washington, Pa.....	.....	First....	\$15 00

U. C. BROUSE, Kendallville, Ind.; JOHN L. THOMPSON, Gas City, Ind., Judges.

## FAT SHEEP.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Pen of 2 Wethers 2 Years or Over.			
Ralph and Wayne Postle, Camp Chase, O.....	Billy and Fred.....	First....	\$8 00
Pen of 2 Wethers 1 Year and Under 2.			
Ralph and Wayne Postle, Camp Chase, O.....	Ray and Jack.....	First....	8 00
Same .....	Sam and Carl.....	Second..	5 00
C. C. Shaw & Son, Newark, O.....	.....	.....	.....
Pen of 2 Wether Lambs.			
Ralph and Wayne Postle, Camp Chase, O.....	Tom and Jerry.....	First....	5 00
C. C. Shaw & Son, Newark, O.....	.....	Second..	3 00

JOHN L. THOMPSON, Judge, Gas City, Ind.

## SWINE—B. P. BALDWIN, Member in Charge.

## BERKSHIRES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Boar 2 Years Old or Over.</b>			
Jas. Riley, Sons & Co., Thorntown, Ind.....	.....	First....	\$10 00
J. L. Axline, Summit Station, O.....	Billy .....	Second..	5 00
L. C. Peterson, Spring Valley, O.....	Surprise .....	.....	.....
<b>Boar 1 Year Old and Under 2.</b>			
J. L. Axline, Summit Station, O.....	Licking Duke .....	First....	10 00
Jas. Riley, Sons & Co., Thorntown, Ind.....	.....	Second..	5 00
L. C. Peterson, Spring Valley, O.....	Sucker Boy .....	.....	.....
<b>Boar 6 Months and Under 1 Year.</b>			
Jas. Riley, Sons & Co., Thorntown, Ind.....	.....	First....	8 00
L. C. Peterson, Spring Valley, O.....	Dewey .....	Second..	5 00
J. L. Axline, Summit Station, O.....	Royal Duke .....	.....	.....
<b>Boar Under 6 Months.</b>			
Jas. Riley, Sons & Co., Thorntown, Ind.....	.....	First....	5 00
Same .....	.....	Second..	3 00
Same .....	.....	.....	.....
L. C. Peterson, Spring Valley, O.....	.....	.....	.....
J. L. Axline, Summit Station, O.....	Columbus Boy .....	.....	.....
<b>Sow 2 Years Old or Over.</b>			
L. C. Peterson, Spring Valley, O.....	Ella .....	First....	10 00
Jas. Riley, Sons & Co., Thorntown, Ind.....	.....	Second..	5 00
J. L. Axline, Summit Station, O.....	Summit Rose .....	.....	.....
<b>Sow 1 Year Old and Under 2.</b>			
Jas. Riley, Sons & Co., Thorntown, Ind.....	.....	First....	10 00
L. C. Peterson, Spring Valley, O.....	Faultless .....	Second..	5 00
Same .....	Olivette .....	.....	.....
J. L. Axline, Summit Station, O.....	.....	.....	.....
Jas. Riley, Sons & Co., Thorntown, Ind.....	.....	.....	.....
Same .....	.....	.....	.....
<b>Sow 6 Months Old and Under 1 Year.</b>			
Jas. Riley, Sons & Co., Thorntown, Ind.....	.....	First....	8 00
Same .....	.....	Second..	5 00
Same .....	.....	.....	.....
J. L. Axline, Summit Station, O.....	Columbus Maid .....	.....	.....
L. C. Peterson, Spring Valley, O.....	.....	.....	.....
<b>Sow Under 6 Months.</b>			
Jas. Riley, Sons & Co., Thorntown, Ind.....	.....	First....	5 00
Same .....	.....	Second..	3 00
L. C. Peterson, Spring Valley, O.....	.....	.....	.....
J. L. Axline, Summit Station, O.....	Rosy Bell .....	.....	.....

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar with 4 of His Get.			
J. L. Axline, Summit Station, O.....	.....	First....	\$15 00
Sow with 4 of Her Pigs.			
Jas. Riley, Sons & Co., Thorntown, Ind.....	.....	First....	15 00
L. C. Peterson, Spring Valley, O.....	.....	.....	.....
J. L. Axline, Summit Station, O.....	.....	.....	.....
Boar and 3 Sows Over 1 Year.			
Jas. Riley, Sons & Co., Thorntown, Ind.....	.....	First....	15 00
J. L. Axline, Summit Station, O.....	.....	.....	.....
L. C. Peterson, Spring Valley, O.....	.....	.....	.....
Boar and 3 Sows Under 1 Year.			
Jas. Riley, Sons & Co., Thorntown, Ind.....	.....	First....	15 00
J. L. Axline, Summit Station, O.....	.....	.....	.....

G. S. HALL, Judge.

## POLAND CHINAS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 Years Old or Over.			
Klever & Mills, Bloomingsburg, O.....	Klever's Idea .....	First....	10 00
W. J. Orr, Uniopolis, O.....	Orr's Grand U. S.....	Second..	5 00
Mavis Bros., Edgerton, O.....	Black Joe Perfection.....	.....	.....
F. M. Hays, Piketon, O.....	Ideal Sunshine H.....	.....	.....
T. C. Robinson, Piqua, O.....	Sunshine I Know.....	.....	.....
Bounds Bros., Atherton, O.....	.....	.....	.....
Boar 1 Year Old and Under 2.			
F. C. Lampe, Jeffersonville, O.....	.....	First....	10 00
J. H. Jenkins, Mt. Liberty, O.....	Big Chief .....	Second..	5 00
Mavis Bros., Edgerton, O.....	Ohio Prince .....	.....	.....
F. C. Lampe, Jeffersonville, O.....	Chief Triumph .....	.....	.....
Edward Klever, Bloomingsburg, O.....	.....	.....	.....
Same .....	.....	.....	.....
Shellenberger & Cox, Camden, O.....	Dandy U. S. Chief.....	.....	.....
W. J. Orr, Uniopolis, O.....	Proud U. S.....	.....	.....
Boar 6 Months Old and Under 1 Year.			
Edward Klever, Bloomingsburg, O.....	Chief Rival .....	First....	8 00
Shellenberger & Cox, Camden, O.....	.....	Second..	5 00
Hiram Ingalls, Alton, O.....	Faithful Chief .....	.....	.....
Edward Klever, Bloomingsburg, O.....	.....	.....	.....
Same .....	.....	.....	.....
C. W. O'Harra, Galloway, O.....	.....	.....	.....
Same .....	.....	.....	.....
J. M. Klever, Bloomingsburg, O.....	.....	.....	.....
W. J. Orr, Uniopolis, O.....	.....	.....	.....
T. C. Robinson, Piqua, O.....	.....	.....	.....
Bounds Bros., Atherton, O.....	.....	.....	.....
Same .....	.....	.....	.....

## POLAND CHINAS — Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar Under 6 Months Old.			
Shellenberger & Cox, Camden, O.....	Lawrence Perfection .....	First....	5 00
Mavis Bros., Edgerton, O.....	.....	Second..	3 00
T. C. Robinson, Piqua, O.....	.....		
Hiram Ingalls, Alton, O.....	.....		
Same .....	.....		
Edward Klever, Bloomingburg, O.....	Admiral Chief .....		
Same .....	.....		
F. Kolb & Son, Ontario, O.....	.....		
A. W. Burton, Piqua, O.....	.....		
J. H. Jenkins, Mt. Liberty, O.....	.....		
Frank Wagner, Mansfield, O.....	.....		
Mavis Bros., Edgerton, O.....	Black Joe, Jr. ....		
Bounds Bros., Atherton, O.....	.....		
Edward Klever, Bloomingburg, O.....	.....		
Frank Wagner, Mansfield, O.....	.....		
John Vogel, Jr., Chicago, O.....	.....		
Same .....	.....		
Bounds Bros., Atherton, O.....	.....		
Shellenberger & Cox, Camden, O.....	.....		
Same .....	.....		
J. M. Klever, Bloomingburg, O.....	.....		
F. M. Hays, Piketon, O.....	.....		
Same .....	.....		
W. F. Mack, Marion, O.....	.....		
C. W. Haines, Centreville, O.....	.....		
Same .....	.....		
Same .....	.....		
Sow 2 Years Old or Over.			
J. M. Klever, Bloomingburg, O.....	Galena .....	First....	10 00
Mavis Bros., Edgerton, O.....	Daisy Darkness .....	Second..	5 00
Same .....	Hadley's Queen .....		
Bounds Bros., Atherton, O.....	.....		
Sow 1 Year Old and Under 2.			
W. F. Mack, Marion, O.....	Pride .....	First....	10 00
Edward Klever, Bloomingburg, O.....	Pearl .....	Second..	5 00
Same .....	Black Rose .....		
Mavis Bros., Edgerton, O.....	Elma A. ....		
Same .....	Queen Victoria .....		
Shellenberger & Cox, Camden, O.....	Trinket .....		
F. M. Hays, Piketon, O.....	U. S. Girl .....		
Same .....	Graceful .....		
W. J. Orr, Uniopolis, O.....	.....		
W. F. Mack, Marion, O.....	.....		
T. C. Robinson, Piqua, O.....	.....		
Same .....	.....		
Bounds Bros., Atherton, O.....	.....		
Same .....	.....		
Sow 6 Months Old and Under 1 Year.			
Shellenberger & Cox, Camden, O.....	.....	First....	8 00
Same .....	.....	Second..	5 00
Same .....	.....		
Same .....	.....		
Edward Klever, Bloomingburg, O.....	May Peerless III .....		
Same .....	" IV .....		
C. W. O'Harra, Galloway, O.....	.....		
J. M. Klever, Bloomingburg, O.....	.....		
Same .....	.....		
Same .....	.....		
W. J. Orr, Uniopolis, O.....	Graceful VI .....		
Same .....	Miss Look Me Over .....		
W. F. Mack, Marion, O.....	.....		
Same .....	.....		
T. C. Robinson, Piqua, O.....	.....		
Bounds Bros., Atherton, O.....	.....		
Same .....	.....		



## POLAND CHINAS—Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Sow Under 6 Months Old.			
C. W. Haines, Centreville, O.....		First....	5 00
J. M. Klever, Bloomingburg, O.....		Second..	3 00
Hiram Ingalls, Alton, O.....			
Same .....			
Bounds Bros., Atherton, O.....			
Edward Klever, Bloomingburg, O.....			
Same .....			
A. W. Burton, Piqua, O.....			
F. Kolb & Son, Ontario, O.....			
J. H. Jenkins, Mt. Liberty, O.....			
C. W. Haines, Centreville, O.....			
Mavis Bros., Edgerton, O.....	Darkness Pride .....		
Same .....	Darkness II .....		
T. C. Robinson, Piqua, O.....			
Shellenberger & Cox, Camden, O.....			
Frank Wagner, Mansfield, O.....			
Shellenberger & Cox, Camden, O.....			
Same .....			
Same .....			
Frank Wagner, Mansfield, O.....			
Bounds Bros., Atherton, O.....			
J. M. Klever, Bloomingburg, O.....			
Same .....			
F. M. Hays, Piketon, O.....			
Same .....			
W. F. Mack, Marion, O.....			
Same .....			
C. W. Haines, Centreville, O.....			

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar with 4 of His Get.			
Klever & Mills, Bloomingburg, O.....		First....	\$15 00
Mavis Bros., Edgerton, O.....			
F. M. Hays, Piketon, O.....			
W. J. Orr, Uniopolis, O.....			
T. C. Robinson, Piqua, O.....			
Bounds Bros., Atherton, O.....			
Sow with 4 of Her Pigs.			
J. M. Klever, Bloomingburg, O.....		First....	15 00
Mavis Bros., Edgerton, O.....			
Bounds Bros., Atherton, O.....			
Boar and 3 Sows (Over 1 Year.			
Mavis Bros., Edgerton, O.....		First....	15 00
Edward Klever, Bloomingburg, O.....			
F. M. Hays, Piketon, O.....			
T. C. Robinson, Piqua, O.....			
Bounds Bros., Atherton, O.....			
Boar and 3 Sows Under 1 Year.			
Shellenberger & Cox, Camden, O.....		First....	15 00
Edward Klever, Bloomingburg, O.....			
J. M. Klever, Bloomingburg, O.....			
F. M. Hays, Piketon, O.....			

## POLAND CHINAS — Concluded.

Special Offer by the Ohio Poland China Record Co.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
J. M. Klever, Bloomingburg, O.....	.....	First....	.....
Hiram Ingalls, Alton, O.....	.....	.....	.....
Same .....	.....	.....	.....
Bounds Bros., Atherton, O.....	.....	.....	.....
Same .....	.....	.....	.....

C. R. Betts, Judge.

## CHESTER WHITES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 Years Old or Over.			
W. T. Dever, Lucasville, O.....	Chas. D .....	First....	\$10 00
C. Hintz, Fremont, O.....	Max .....	Second..	5 00
J. L. Beringer, Marion, O.....	16 to 1 .....	.....	.....
F. A. Branch, Medina, O.....	Wise Branch .....	.....	.....
P. T. Courter, Delaware, O.....	Bob .....	.....	.....
Boar 1 Year Old and Under 2.			
F. P. & J. J. Hardin, South Warsaw, O.....	Admiral .....	First....	10 00
F. A. Branch, Medina, O.....	George K .....	Second..	5 00
C. Hintz, Fremont, O.....	Dewey H .....	.....	.....
J. L. Beringer, Marion, O.....	Klondyke II .....	.....	.....
P. T. Courter, Delaware, O.....	Starr .....	.....	.....
F. P. & J. J. Hardin, South Warsaw, O.....	Semper Fidellis Bob.....	.....	.....
Bailey & Cummins, Cedarville, O.....	.....	.....	.....
Boar 6 Months Old and Under 1 Year.			
Bailey & Cummins, Cedarville, O.....	.....	First....	8 00
F. P. & J. J. Hardin, South Warsaw, O.....	Sampson .....	Second..	5 00
C. Hintz, Fremont, O.....	Orient II .....	.....	.....
Same .....	" H .....	.....	.....
W. T. Dever, Lucasville, O.....	.....	.....	.....
Same .....	.....	.....	.....
J. L. Beringer, Marion, O.....	.....	.....	.....
F. A. Branch, Medina, O.....	.....	.....	.....
F. P. & J. J. Hardin, South Warsaw, O.....	Protection .....	.....	.....
L. H. Martin, Alexandria, O.....	.....	.....	.....
Boar Under 6 Months Old.			
F. A. Branch, Medina, O.....	Frank B .....	First....	5 00
L. H. Martin, Alexandria, O.....	Victor III .....	Second..	3 00
George W. Lisle, Alton, O.....	Orient III .....	.....	.....
C. Hintz, Fremont, O.....	" IV .....	.....	.....
Same .....	.....	.....	.....
J. L. Beringer, Marion, O.....	.....	.....	.....
F. A. Branch, Medina, O.....	Frank B .....	.....	.....
P. T. Courter, Delaware, O.....	Dido .....	.....	.....
F. P. & J. J. Hardin, South Warsaw, O.....	.....	.....	.....
Same .....	.....	.....	.....
Bailey & Cummins, Cedarville, O.....	.....	.....	.....
Sow 2 Years Old and Over.			
C. Hintz, Fremont, O.....	Shorttail IV .....	First....	10 00
J. L. Beringer, Marion, O.....	Maud II .....	Second..	5 00
Same .....	Red Ribbon .....	.....	.....
Wm. T. Dever, Lucasville, O.....	Cloud .....	.....	.....
Same .....	Isabella .....	.....	.....
F. A. Branch, Medina, O.....	Silver Girl II.....	.....	.....

## CHESTER WHITES—Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Sow 1 Year Old, and Under 2.			
Bailey & Cummins, Cedarville, O.....	.....	First....	10 00
C. Hintz, Fremont, O.....	Flora .....	Second..	5 00
W. T. Dever, Lucasville, O.....	Pearl II .....	.....	.....
F. A. Branch, Medina, O.....	Bess B .....	.....	.....
Sow 6 Months Old and Under 1 Year.			
W. T. Dever, Lucasville, O.....	Pearl III .....	First....	8 00
L. H. Martin, Alexandria, O.....	.....	Second..	5 00
Same .....	.....	.....	.....
C. Hintz, Fremont, O.....	Dolly .....	.....	.....
Same .....	" 2d .....	.....	.....
J. L. Beringer, Marion, O.....	.....	.....	.....
Bailey & Cummins, Cedarville, O.....	.....	.....	.....
Sow Under 6 Months Old.			
J. L. Beringer, Marion, O.....	.....	First....	5 00
W. T. Dever, Lucasville, O.....	.....	Second..	3 00
G. W. Lisle, Alton, O.....	.....	.....	.....
C. Hintz, Fremont, O.....	Flora XI.....	.....	.....
Same .....	" XII.....	.....	.....
W. T. Dever, Lucasville, O.....	.....	.....	.....
F. A. Branch, Medina, O.....	Frances .....	.....	.....
P. T. Courter, Delaware, O.....	Dot .....	.....	.....
F. A. Branch, Medina, O.....	Frances 2d.....	.....	.....
F. P. & J. J. Hardin, South Warsaw, O.....	.....	.....	.....
Same .....	.....	.....	.....
Bailey & Cummins, Cedarville, O.....	.....	.....	.....
Same .....	.....	.....	.....
L. H. Martin, Alexandria, O.....	.....	.....	.....

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar with 4 of His Get.			
F. A. Branch, Medina, O.....	.....	First....	\$15 00
C. Hintz, Fremont, O.....	.....	.....	.....
F. P. & J. J. Hardin, South Warsaw, O.....	.....	.....	.....
Sow with 4 of Her Pigs.			
F. A. Branch, Medina, O.....	.....	First....	15 00
W. T. Dever, Lucasville, O.....	.....	.....	.....
F. P. & J. J. Hardin, South Warsaw, O.....	.....	.....	.....
Boar and 3 Sows Over 1 Year Old.			
W. T. Dever, Lucasville, O.....	.....	First....	15 00
J. L. Beringer, Marion, O.....	.....	.....	.....
F. A. Branch, Medina, O.....	.....	.....	.....
Boar and 3 Sows Under 1 Year Old.			
W. T. Dever, Lucasville, O.....	.....	First....	15 00
C. Hintz, Fremont, O.....	.....	.....	.....
F. A. Branch, Medina, O.....	.....	.....	.....
F. P. & J. J. Hardin, South Warsaw, O.....	.....	.....	.....
L. H. Martin, Alexandria, O.....	.....	.....	.....

## CHESTER WHITES—Concluded.

Special Offer by the American Chester White Record Association.

Owner's Name and Postoffice.	Name of Animal.	Prem. am.	Amount.
3 Chester White Pigs Under 1 Year			
G. W. Lisle, Alton, O.....	.....	.....	.....

C. R. BETTS, Judge.

## VICTORIAS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<b>Boar 2 Years Old and Over.</b>			
George Ineichen, Celina, O.....	.....	First.....	\$10 00
Davis Bros., Dyer, Ind.....	McKinley .....	Second.....	5 00
Same .....	Almont .....	.....	.....
Same .....	Don .....	.....	.....
<b>Boar 1 Year Old and Under 2.</b>			
Davis Bros., Dyer, Ind.....	Jim .....	First.....	10 00
George Ineichen, Celina, O.....	.....	.....	.....
<b>Boar 6 Months Old and Under 1 Year.</b>			
George Ineichen, Celina, O.....	.....	First.....	8 00
Davis Bros., Dyer, Ind.....	Cup Bearer.....	Second.....	5 00
<b>Boar Under 6 Months Old.</b>			
George Ineichen, Celina, O.....	.....	First.....	5 00
Davis Bros., Dyer, Ind.....	Get There I.....	Second.....	3 00
Same .....	" II.....	.....	.....
<b>Sow 2 Years Old and Over.</b>			
Davis Bros., Dyer, Ind.....	Lady Amont I.....	First.....	10 00
Same .....	Lady Elegant.....	Second.....	5 00
George Ineichen, Celina, O.....	.....	.....	.....
<b>Sow 1 Year Old and Under 2.</b>			
Davis Bros., Dyer, Ind.....	Alments Choice I.....	First.....	10 00
Same .....	" II.....	Second.....	5 00
George Ineichen, Celina, O.....	.....	.....	.....
<b>Sow 6 Months Old and Under 1 Year.</b>			
Davis Bros., Dyer, Ind.....	Long Kate I.....	First.....	8 00
George Ineichen, Celina, O.....	.....	.....	.....
Davis Bros., Dyer, Ind.....	Long Kate II.....	.....	.....
<b>Sow Under 6 Months Old.</b>			
George Ineichen, Celina, O.....	.....	First.....	5 00
Davis Bros., Dyer, Ind.....	Lady Get There I.....	Second.....	3 00
Same .....	" II.....	.....	.....
George Ineichen, Celina, O.....	.....	.....	.....

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar with 4 of His Get.			
George Ineichen, Celina, O.....	.....	First....	\$15 00
Davis Bros., Dyer, Ind.....	.....	.....	.....
Same .....	.....	.....	.....
Sow with 4 of Her Pigs.			
Davis Bros., Dyer, Ind.....	.....	First....	15 00
Same .....	.....	.....	.....
George Ineichen, Celina, O.....	.....	.....	.....
Boar and 8 Sows Over 1 Year Old.			
Davis Bros., Dyer, Ind.....	.....	First....	15 00
Same .....	.....	.....	.....
George Ineichen, Celina, O.....	.....	.....	.....
Boar and 8 Sows Under 1 Year Old.			
Davis Bros., Dyer, Ind.....	.....	First....	15 00
Same .....	.....	.....	.....
George Ineichen, Celina, O.....	.....	.....	.....

G. S. HALL, Judge.

## DUROC JERSEYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 Years Old or Over.			
Titworth & Co., Celina, O.....	King Protection .....	First....	\$10 00
Same .....	Woodlawn Boy .....	Second..	5 00
O. Walter & Bro., Lebanon, O.....	Judge Wonder .....	.....	.....
Boar 1 Year Old and Under 2.			
Titworth & Co., Celina, O.....	Radfield .....	First....	10 00
O. Walter & Bro., Lebanon, O.....	Belmont .....	Second..	5 00
Same .....	Fancy Lad .....	.....	.....
Brown, Moorman & Co., Winchester, Ind.....	Sensation .....	.....	.....
Same .....	Alfortis Boy .....	.....	.....
J. L. Wyly, Granville, O.....	Pure Gold .....	.....	.....
Boar 6 Months Old and Under 1 Year.			
O. Walter & Bro., Lebanon, O.....	Star Duchess .....	First....	8 00
Same .....	King Duchess .....	Second..	5 00
Titworth & Co., Celina, O.....	Jim Orr .....	.....	.....
Brown, Moorman & Co., Winchester, Ind.....	Orion Lad .....	.....	.....
Same .....	.....	.....	.....
R. C. Watt, Cedarville, O.....	.....	.....	.....
Same .....	.....	.....	.....
O. Walter & Bro., Lebanon, O.....	.....	.....	.....
Boar Under 6 Months Old.			
O. Walter & Bro., Lebanon, O.....	.....	First....	5 00
R. C. Watt, Cedarville, O.....	.....	Second..	8 00
Same .....	.....	.....	.....
O. Walter & Bro., Lebanon, O.....	.....	.....	.....
Titworth & Co., Celina, O.....	.....	.....	.....
Same .....	.....	.....	.....
Brown, Moorman & Co., Winchester, Ind.....	.....	.....	.....
Same .....	.....	.....	.....
J. L. Wyly, Granville, O.....	.....	.....	.....

## DUROC JERSEYS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Sow 2 Years Old or Over.			
O. Walter & Bro., Lebanon, O.....	Young Duchess IV.....	First....	10 00
Same .....	Kate Wonder II.....	Second..	5 00
Titsworth & Co., Celina, O.....	Trilby .....		
Same .....	Alma .....		
Brown, Moorman & Co., Winchester, Ind.....	Melody II .....		
Same .....	Ideal .....		
R. C. Watt, Cedarville, O.....			
Sow 1 Year Old and Under 2.			
O. Walter & Bro., Lebanon, O.....	Kate Wonder XI.....	First....	10 00
Same .....	" XII.....	Second..	5 00
Titsworth & Co., Celina, O.....	Vinola .....		
Same .....	Annabel .....		
Brown, Moorman & Co., Winchester, Ind.....	Tips Bet .....		
Same .....	Mary Wood .....		
R. C. Watt, Cedarville, O.....			
Sow 6 Months Old and Under 1 Year.			
O. Walter & Bro., Lebanon, O.....		First....	8 00
Same .....		Second..	5 00
Titsworth & Co., Celina, O.....			
Same .....			
Brown, Moorman & Co., Winchester, Ind.....			
Same .....			
R. C. Watt, Cedarville, O.....			
O. Walter & Bro., Lebanon, O.....			
Titsworth & Co., Celina, O.....			
Sow Under 6 Months Old.			
O. Walter & Bro., Lebanon, O.....		First....	5 00
Same .....		Second..	3 00
Titsworth & Co., Celina, O.....			
Same .....			
Brown, Moorman & Co., Winchester, Ind.....			
Same .....			
R. C. Watt, Cedarville, O.....			
Same .....			
J. L. Wyly, Granville, O.....			
Same .....			

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar with 4 of His Get.			
O. Walter & Bro., Lebanon, O.....	.....	First....	\$15 00
Titsworth & Co., Celina, O.....	.....	.....	.....
Brown, Moorman & Co., Winchester, Ind.....	.....	.....	.....
Sow with 4 of Her Pigs.			
O. Walter & Bro., Lebanon, O.....	.....	First....	15 00
Brown, Moorman & Co., Winchester, Ind.....	.....	.....	.....
Boar and 3 Sows Over 1 Year Old.			
O. Walter & Bro., Lebanon, O.....	.....	First....	15 00
Titsworth & Co., Celina, O.....	.....	.....	.....
Brown, Moorman & Co., Winchester, Ind.....	.....	.....	.....
Boar and 3 Sows Under 1 Year.			
O. Walter & Bro., Lebanon, O.....	.....	First....	15 00
Titsworth & Co., Celina, O.....	.....	.....	.....
Brown, Moorman & Co., Winchester, Ind.....	.....	.....	.....

C. R. BETTS, Judge.

## SUFFOLK, YORKSHIRE, CHESHIRE AND ESSEX.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 Years Old or Over.			
Bascome & McMurry, California, Mich.....	Sharon Boy.....	First....	\$10 00
Mrs. A. J. Wilson, Pittsfield, O.....	Pat Maloy.....	Second..	5 00
Boar 1 Year Old and Under 2.			
Bascome & McMurry, California, Mich.....	Sampson .....	First....	10 00
Spiker & Taylor, Mansfield, O.....	Leander .....	Second..	5 00
Same .....	Elinor .....	.....	.....
Boar 6 Months Old and Under 1 Year.			
Bascome & McMurry, California, Mich.....	Shafter .....	First....	8 00
Mrs. A. J. Wilson, Pittsfield, O.....	Eureka Billy.....	Second..	5 00
Bascome & McMurry, California, Mich.....	Pingree .....	.....	.....
Spiker & Taylor, Mansfield, O.....	Alvin .....	.....	.....
Boar Under 6 Months Old.			
Spiker & Taylor, Mansfield, O.....	Abram .....	First....	5 00
Mrs. A. J. Wilson, Pittsfield, O.....	Eureka Joe.....	Second..	3 00
Bascome & McMurry, California, Mich.....	Bob .....	.....	.....
Sow 2 Years Old and Over.			
Bascome & McMurry, California, Mich.....	Eva H.....	First....	10 00
Mrs. A. J. Wilson, Pittsfield, O.....	Latty Bacon.....	Second..	5 00
Same .....	Faultless Queen York.....	.....	.....
Bascome & McMurry, California, Mich.....	.....	.....	.....
Sow 1 Year Old and Under 2.			
Bascome & McMurry, California, Mich.....	Eva H. V.....	First....	10 00
Spiker & Taylor, Mansfield, O.....	Champion .....	Second..	5 00
Same .....	Ruth I.....	.....	.....
Same .....	" II.....	.....	.....
Mrs. A. J. Wilson, Pittsfield, O.....	Oak Lodge Victoria.....	.....	.....
Same .....	Oak Lodge Moss Rose.....	.....	.....
Bascome & McMurry, California, Mich.....	Graceful .....	.....	.....

## ENTRIES AND AWARDS.

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## SUFFOLK, YORKSHIRE, CHESHIRE AND ESSEX — Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Sow 6 Months Old and Under 1 Year.			
Bascome & McMurry, California, Mich.....	Cuba .....	First....	8 00
Same .....	Helen G .....	Second..	5 00
Mrs. A. J. Wilson, Pittsfield, O.....	Cinderella .....	.....	.....
Same .....	Oak Lodge Abbess.....	.....	.....
Spiker & Taylor, Mansfield, O.....	Mansfield Girl .....	.....	.....
Mrs. A. J. Wilson, Pittsfield, O.....	.....	.....	.....
Bascome & McMurry, California, Mich.....	Profile II .....	.....	.....
Sow Under 6 Months Old.			
Bascome & McMurry, California, Mich.....	Little Bill .....	First....	5 00
Same .....	Dot .....	Second..	5 00
Mrs. A. J. Wilson, Pittsfield, O.....	Eureka Duchess .....	.....	.....

## SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar and 4 of His Get.			
Bascome & McMurry, California, Mich.....	.....	First....	\$15 00
Sow with 4 of Her Pigs.			
Bascome & McMurry, California, Mich.....	.....	First....	15 00
Spiker & Taylor, Mansfield, O.....	.....	.....	.....
Mrs. A. J. Wilson, Pittsfield, O.....	.....	.....	.....
Boar and 3 Sows Over 1 Year Old.			
Bascome & McMurry, California, Mich.....	.....	First....	15 00
Mrs. A. J. Wilson, Pittsfield, O.....	.....	.....	.....
Spiker & Taylor, Mansfield, O.....	.....	.....	.....
Boar and 3 Sows Under 1 Year Old.			
Bascome & McMurry, California, Mich.....	.....	First....	15 00
Mrs. A. J. Wilson, Pittsfield, O.....	.....	.....	.....

G. S. HALL, Judge.



## POULTRY—D. J. GREEN, Member in Charge.

## CLASS I—AMERICAN.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
<b>Barred Plymouth Rock.</b>		
G. M. Leffel, Springfield, O.....	Best cock .....	1 25
Same .....	2d .....	75
Same .....	Best cockerel .....	1 25
Same .....	2d .....	75
Same .....	Best hen .....	1 25
J. A. Tucker, Concord, Mich.....	2d .....	75
Ves Baughman, Marysville, O.....	Best pullet .....	1 25
G. M. Leffel, Springfield, O.....	2d .....	75
Same .....	Best breeding pen.....	2 00
Same .....	2d .....	1 00
<b>White Plymouth Rock.</b>		
W. T. Elliott, Bloomingburg, O.....	Best cock .....	1 25
W. F. Volk, Westerville, O.....	2d .....	75
Chas. Gammerdinger, Columbus, O.....	Best cockerel .....	1 25
J. H. Nepp, Bellaire, O.....	2d .....	75
Chas. McClave, New London, O.....	Best hen .....	1 25
Same .....	2d .....	75
W. T. Elliott, Bloomingburg, O.....	Best pullet .....	1 25
Chas. McClave, New London, O.....	2d .....	75
W. T. Elliott, Bloomingburg, O.....	Best breeding pen.....	2 00
Chas. McClave, New London, O.....	2d .....	1 00
<b>Buff Plymouth Rock.</b>		
Chas. McClave, New London, O.....	Best cock .....	1 25
Eugene Sites, Elyria, O.....	2d .....	75
J. A. Tucker, Concord, Mich.....	Best cockerel .....	1 25
Eugene Sites, Elyria, O.....	2d .....	75
Same .....	Best hen .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d .....	75
J. A. Tucker, Concord, Mich.....	Best pullet .....	1 25
Thos. Cory, New Carlisle, O.....	2d .....	75
Eugene Sites, Elyria, O.....	Best breeding pen.....	2 00
Chas. Gammerdinger, Columbus, O.....	2d .....	1 00
<b>White Wyandotte.</b>		
Chas. McClave, New London, O.....	Best cock .....	\$1 25
C. H. Bell, Ashley, O.....	2d .....	75
C. E. & W. Smith, Ashley, O.....	Best cockerel .....	1 25
C. H. Bell, Ashley, O.....	2d .....	75
Chas. McClave, New London, O.....	Best hen .....	1 25
C. H. Bell, Ashley, O.....	2d .....	75
C. E. & W. Smith, Ashley, O.....	Best pullet .....	1 25
Chas. McClave, New London, O.....	2d .....	75
Same .....	Best breeding pen.....	2 00
C. H. Bell, Ashley, O.....	2d .....	1 00
<b>Silver Wyandotte.</b>		
W. F. Volk, Westerville, O.....	Best cock .....	\$1 25
J. A. Tucker, Concord, Mich.....	2d .....	75
Same .....	Best cockerel .....	1 25
C. B. Gaylord, Sunbury, O.....	2d .....	75
C. H. Eldridge, Galena, O.....	Best hen .....	1 25
C. E. Zahn, Mt. Sterling, O.....	2d .....	75
C. E. & W. Smith, Ashley, O.....	Best pullet .....	1 25
J. A. Tucker, Concord, Mich.....	2d .....	75
C. E. Zahn, Mt. Sterling, O.....	Best breeding pen.....	2 00
C. E. & W. Smith, Ashley, O.....	2d .....	1 00

# AWARDS.

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## CLASS I — AMERICAN — Concluded.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
<b>Golden Wyandotte.</b>		
Chas. Gammerdinger, Columbus, O.....	Best cock .....	1 25
C. E. & W. Smith, Ashley, O.....	2d " .....	75
Same .....	Best cockerel .....	1 25
Same .....	2d " .....	75
S. B. McFarland, Sunbury, O.....	Best hen .....	1 25
Same .....	2d " .....	75
C. E. & W. Smith, Ashley, O.....	Best pullet .....	1 25
J. A. Tucker, Concord, Mich.....	2d " .....	75
C. E. & W. Smith, Ashley, O.....	Best breeding pen.....	2 00
Chas. Gammerdinger, Columbus, O.....	2d " .....	1 00
<b>Black Wyandotte.</b>		
Chas. Gammerdinger, Columbus, O.....	Best cock .....	1 25
W. W. Stuckey, Lancaster, O.....	2d " .....	75
Same .....	Best hen .....	1 25
Thos. Cory, New Carlisle, O.....	2d " .....	75
<b>Buff Wyandotte.</b>		
Eugene Sites, Elyria, O.....	Best cock .....	1 25
W. F. Volk, Westerville, O.....	2d " .....	75
W. E. Payne, Ashville, O.....	Best cockerel .....	1 25
Eugene Sites, Elyria, O.....	2d " .....	75
W. F. Volk, Westerville, O.....	Best hen .....	1 25
J. A. Tucker, Concord, Mich.....	2d " .....	75
Eugene Sites, Elyria, O.....	Best pullet .....	1 25
Same .....	2d " .....	75
<b>Black Java.</b>		
Chas. Gammerdinger, Columbus, O.....	Best cock .....	1 25
W. F. Volk, Westerville, O.....	2d " .....	75
M. M. Myers, New Dover, O.....	Best cockerel .....	1 25
J. A. Tucker, Concord, Mich.....	2d " .....	75
Thos. Cory, New Carlisle, O.....	Best hen .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d " .....	75
Same .....	Best pullet .....	1 25
J. A. Tucker, Concord, Mich.....	2d " .....	75
Chas. Gammerdinger, Columbus, O.....	Best breeding pen.....	2 00
W. W. Stuckey, Lancaster, O.....	2d " .....	1 00

## CLASS II — ASIATIC.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
<b>Light Brahma.</b>		
Chas. Gammerdinger, Columbus, O.....	Best cock .....	1 25
J. A. Tucker, Concord, Mich.....	2d " .....	75
Thos. Cory, New Carlisle, O.....	Best cockerel .....	1 25
W. F. Volk, Westerville, O.....	2d " .....	75
J. A. Tucker, Concord, Mich.....	Best hen .....	1 25
J. H. Neff, Bellaire, O.....	2d " .....	75
W. F. Volk, Westerville, O.....	Best pullet .....	1 25
Thos. Cory, New Carlisle, O.....	2d " .....	75
Chas. Gammerdinger, Columbus, O.....	Best breeding pen.....	2 00
W. F. Volk, Westerville, O.....	2d " .....	1 00

## CLASS II — ASIATIC — Concluded.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
<b>Dark Brahma.</b>		
Chas. Gammerdinger, Columbus, O.....	Best cock .....	1 25
W. W. Stuckey, Lancaster, O.....	2d .....	75
J. A. Tucker, Concord, Mich.....	Best cockerel .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d .....	75
Same .....	Best hen .....	1 25
J. A. Tucker, Concord, Mich.....	2d .....	75
C. E. & W. Smith, Ashley, O.....	Best pullet .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d .....	75
Same .....	Best breeding pen.....	2 00
C. E. & W. Smith, Ashley, O.....	2d .....	1 00
<b>Buff Cochin.</b>		
J. A. Tucker, Concord, Mich.....	Best cock .....	1 25
Same .....	2d .....	75
Earl Shaw, Bloomingburg, O.....	Best cockerel .....	1 25
Same .....	2d .....	75
J. A. Tucker, Concord, Mich.....	Best hen .....	1 25
Same .....	2d .....	75
Earl Shaw, Bloomingburg, O.....	Best pullet .....	1 25
Same .....	2d .....	75
Same .....	Best breeding pen.....	2 00
Chas. Gammerdinger, Columbus, O.....	2d .....	1 00
<b>Partridge Cochin.</b>		
C. E. & W. Smith, Ashley, O.....	Best cock .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d .....	75
Same .....	Best cockerel .....	1 25
C. E. & W. Smith, Ashley, O.....	2d .....	75
Same .....	Best hen .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d .....	75
Same .....	Best pullet .....	1 25
C. E. & W. Smith, Ashley, O.....	2d .....	75
Same .....	Best breeding pen.....	2 00
Chas. Gammerdinger, Columbus, O.....	2d .....	1 00
<b>White Cochin.</b>		
W. S. Carle, New Garden, O.....	Best cock .....	1 25
Same .....	2d .....	75
Same .....	Best cockerel .....	1 25
J. A. Tucker, Concord, Mich.....	2d .....	75
W. S. Carle, New Garden, O.....	Best hen .....	1 25
J. A. Tucker, Concord, Mich.....	2d .....	75
Same .....	Best pullet .....	1 25
W. S. Carle, New Garden, O.....	2d .....	75
<b>Black Cochin.</b>		
J. A. Tucker, Concord, Mich.....	Best cock .....	1 25
Same .....	2d .....	75
Same .....	Best cockerel .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d .....	75
J. A. Tucker, Concord, Mich.....	Best hen .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d .....	75
J. A. Tucker, Concord, Mich.....	Best pullet .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d .....	75
<b>Black Langshan.</b>		
W. W. Stuckey, Lancaster, O.....	Best cock .....	1 25
J. A. Tucker, Concord, Mich.....	2d .....	75
Chas. Gammerdinger, Columbus, O.....	Best cockerel .....	1 25
H. V. Shoemaker, Ashley, O.....	Best hen .....	1 25
J. A. Tucker, Concord, Mich.....	2d .....	75
Chas. Gammerdinger, Columbus, O.....	Best pullet .....	1 25
Same .....	2d .....	75
W. W. Stuckey, Lancaster, O.....	Best breeding pen.....	2 00
Chas. Gammerdinger, Columbus, O.....	2d .....	1 00

## CLASS III — MEDITERRANEAN.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
<b>S. C. Brown Leghorn.</b>		
W. F. Volk, Westerville, O.....	Best cock .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d " .....	75
Thos. Cory, New Carlisle, O.....	Best cockerel .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d " .....	75
Chas. McClave, New London, O.....	Best hen .....	1 25
J. H. Neff, Bellaire, O.....	2d " .....	75
Thos. Cory, New Carlisle, O.....	Best pullet .....	1 25
Chas. McClave, New London, O.....	2d " .....	75
<b>R. C. Brown Leghorn.</b>		
J. T. Hanawalt, Delaware, O.....	Best cock .....	1 25
A. H. Kochensparger, Junction City, O.....	2d " .....	75
J. T. Hanawalt, Delaware, O.....	Best cockerel .....	1 25
Thos. Cory, New Carlisle, O.....	2d " .....	75
W. F. Volk, Westerville, O.....	Best hen .....	1 25
J. T. Hanawalt, Delaware, O.....	2d " .....	75
Chas. McClave, New London, O.....	Best pullet .....	1 25
Dr. G. F. Blotner, West Mansfield, O.....	2d " .....	75
J. T. Hanawalt, Delaware, O.....	Best breeding pen.....	2 00
W. F. Volk, Westerville, O.....	2d " .....	1 00
<b>S. C. White Leghorn.</b>		
W. F. Volk, Westerville, O.....	Best cock .....	1 25
Thos. Cory, New Carlisle, O.....	2d " .....	75
Same .....	Best cockerel .....	1 25
C. H. Bell, Ashley, O.....	2d " .....	75
W. F. Volk, Westerville, O.....	Best hen .....	1 25
Chas. McClave, New London, O.....	2d " .....	75
C. H. Bell, Ashley, O.....	Best pullet .....	1 25
J. H. Neff, Bellaire, O.....	2d " .....	75
W. F. Volk, Westerville, O.....	Best breeding pen.....	2 00
C. H. Bell, Ashley, O.....	2d " .....	1 00
<b>R. C. White Leghorn.</b>		
Chas. Gammerdinger, Columbus, O.....	Best cock .....	1 25
W. F. Volk, Westerville, O.....	2d " .....	75
J. A. Tucker, Concord, Mich.....	Best cockerel .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d " .....	75
W. F. Volk, Westerville, O.....	Best hen .....	1 25
J. A. Tucker, Concord, Mich.....	2d " .....	75
Chas. Gammerdinger, Columbus, O.....	Best pullet .....	1 25
J. A. Tucker, Concord, Mich.....	2d " .....	75
<b>Black Leghorn.</b>		
Thos. Cory, New Carlisle, O.....	Best cock .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d " .....	75
Same .....	Best cockerel .....	1 25
J. A. Tucker, Concord, Mich.....	2d " .....	75
Chas. Gammerdinger, Columbus, O.....	Best hen .....	1 25
J. A. Tucker, Concord, Mich.....	2d " .....	75
Chas. Gammerdinger, Columbus, O.....	Best pullet .....	1 25
W. F. Volk, Westerville, O.....	2d " .....	75
<b>Buff Leghorn.</b>		
J. H. Neff, Bellaire, O.....	Best cock .....	1 25
J. J. Eustice, Columbus, O.....	2d " .....	75
Eugene Sites, Elyria, O.....	Best cockerel .....	1 25
J. A. Tucker, Concord, Mich.....	2d " .....	75
Chas. McClave, New London, O.....	Best hen .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d " .....	75
Eugene Sites, Elyria, O.....	Best pullet .....	1 25
J. H. Nepp, Bellaire, O.....	2d " .....	75
Same .....	Best breeding pen.....	2 00
Chas. McClave, New London, O.....	2d " .....	1 00

## CLASS III — MEDITERRANEAN — Concluded.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
<b>Black Minorca.</b>		
J. A. Tucker, Concord, Mich.....	Best cock .....	\$1 25
Chas. McClave, New London, O.....	2d " .....	75
Mrs. A. G. Stultz, Sunbury, O.....	Best cockerel .....	1 25
O. M. Creath, Bloomingburg, O.....	2d " .....	75
Eugene Sites, Elyria, O.....	Best hen .....	1 25
H. B. Gregory & Son, Akron, O.....	2d " .....	75
C. E. & W. Smith, Ashley, O.....	Best pullet .....	1 25
Mrs. A. G. Stultz, Sunbury, O.....	2d " .....	75
Same .....	Best breeding pen.....	2 00
Eugene Sites, Elyria, O.....	2d .....	1 00
<b>Blue Andalusian.</b>		
Chas. Gammerdinger, Columbus, O.....	Best cock .....	1 25
J. H. Neff, Bellaire, O.....	2d " .....	75
Eugene Sites, Elyria, O.....	Best cockerel .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d " .....	75
J. H. Neff, Bellaire, O.....	Best hen .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d " .....	75
J. H. Neff, Bellaire, O.....	Best pullet .....	1 25
R. C. Gordon, Bloomingburg, O.....	2d .....	75
<b>Black Spanish.</b>		
J. J. Eustice, Columbus, O.....	Best cock .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d " .....	75
Same .....	Best cockerel .....	1 25
Same .....	2d " .....	75
J. J. Eustice, Columbus, O.....	Best hen .....	1 25
Same .....	2d " .....	75
Chas. Gammerdinger, Columbus, O.....	Best pullet .....	1 25
Same .....	2d .....	75
Same .....	Best breeding pen.....	2 00

## CLASS IV — POLISH.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
<b>W. C. Black Polish.</b>		
Mrs. A. G. Stultz, Sunbury, O.....	Best cock .....	\$1 25
J. A. Tucker, Concord, Mich.....	2d " .....	75
Mrs. A. G. Stultz, Sunbury, O.....	Best cockerel .....	1 25
Same .....	2d " .....	75
Same .....	Best hen .....	1 25
Same .....	2d " .....	75
Same .....	Best pullet .....	1 25
Same .....	2d .....	75
Same .....	Best breeding pen.....	2 00
Same .....	2d .....	1 00
<b>Silver Polish.</b>		
W. F. Volk, Westerville, O.....	Best cock .....	1 25
M. Gammerdinger, Columbus, O.....	2d " .....	75
Same .....	Best cockerel .....	1 25
Same .....	2d " .....	75
J. A. Tucker, Concord, Mich.....	Best hen .....	1 25
M. Gammerdinger, Columbus, O.....	2d " .....	75
Same .....	Best pullet .....	1 25
J. A. Tucker, Concord, Mich.....	2d .....	75
M. Gammerdinger, Columbus, O.....	Best breeding pen.....	2 00

## CLASS IV — POLISH — Concluded.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
White Polish.		
W. F. Volk, Westerville, O.....	Best cock .....	1 25
M. Gammerdinger, Columbus, O.....	2d " .....	75
W. F. Volk, Westerville, O.....	Best hen .....	1 25
M. Gammerdinger, Columbus, O.....	2d " .....	75
	Best breeding pen.....	2 00
Golden Polish.		
W. F. Volk, Westerville, O.....	Best cock .....	1 25
M. Gammerdinger, Columbus, O.....	2d " .....	75
Same	Best cockerel .....	1 25
Same	2d " .....	75
W. F. Volk, Westerville, O.....	Best hen .....	1 25
M. Gammerdinger, Columbus, O.....	2d " .....	75
Same	Best pullet .....	1 25
Same	2d " .....	75
Same	Best breeding pen.....	2 00
Bearded White Polish.		
W. F. Volk, Westerville, O.....	Best cock .....	1 25
M. Gammerdinger, Columbus, O.....	2d " .....	75
Same	Best cockerel .....	1 25
Same	2d " .....	75
W. F. Volk, Westerville, O.....	Best hen .....	1 25
M. Gammerdinger, Columbus, O.....	2d " .....	75
Same	Best pullet .....	1 25
Same	2d " .....	75
Same	Best breeding pen.....	2 00
Buff Laced Polish.		
J. A. Tucker, Concord, Mich.....	Best cock .....	1 25
W. F. Volk, Westerville, O.....	2d " .....	75
M. Gammerdinger, Columbus, O.....	Best cockerel .....	1 25
J. A. Tucker, Concord, Mich.....	2d " .....	75
W. F. Volk, Westerville, O.....	Best hen .....	1 25
J. A. Tucker, Concord, Mich.....	2d " .....	75
Same	Best pullet .....	1 25
M. Gammerdinger, Columbus, O.....	2d " .....	75

## CLASS V — HAMBURG.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Golden Spangled Hamburg.		
Julius Frank, Sherbundy, O.....	Best cock .....	1 25
W. F. Volk, Westerville, O.....	2d " .....	75
Julius Frank, Sherbundy, O.....	Best cockerel .....	1 25
Same	Best hen .....	1 25
Same	2d " .....	75
Same	Best pullet .....	1 25
Same	2d " .....	75
Same	Best breeding pen.....	2 00
M. Gammerdinger, Columbus, O.....	2d " .....	1 00

## CLASS V - HAMBURG - Concluded.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
<b>Silver Spangled Hamburg.</b>		
G. G. Wherry, Galena, O.....	Best cock .....	\$1 25
A. H. Kochensparger, Junction City, O.....	2d " .....	75
G. G. Wherry, Galena, O.....	Best cockerel .....	1 25
Same .....	2d " .....	75
Same .....	Best hen .....	1 25
Julius Frank, Sherbundy, O.....	2d " .....	75
G. G. Wherry, Galena, O.....	Best pullet .....	1 25
Julius Frank, Sherbundy, O.....	2d " .....	75
G. G. Wherry, Galena, O.....	Best breeding pen.....	2 00
Julius Frank, Sherbundy, O.....	2d .....	1 00
<b>Golden Penciled Hamburg.</b>		
Julius Frank, Sherbundy, O.....	Best cock .....	1 25
M. Gammerdinger, Columbus, O.....	2d .....	75
Julius Frank, Sherbundy, O.....	Best cockerel .....	1 25
Same .....	2d .....	75
Same .....	Best hen .....	1 25
Same .....	2d .....	75
Same .....	Best pullet .....	1 25
M. Gammerdinger, Columbus, O.....	2d .....	75
<b>Silver Penciled Hamburg.</b>		
Julius Frank, Sherbundy, O.....	Best cock .....	1 25
M. Gammerdinger, Columbus, O.....	2d .....	75
Julius Frank, Sherbundy, O.....	Best cockerel .....	1 25
M. Gammerdinger, Columbus, O.....	2d .....	75
Julius Frank, Sherbundy, O.....	Best hen .....	1 25
Same .....	2d .....	75
Same .....	Best pullet .....	1 25
Same .....	2d .....	75
<b>Black Hamburg.</b>		
Julius Frank, Sherbundy, O.....	Best cock .....	1 25
M. Gammerdinger, Columbus, O.....	2d .....	75
Julius Frank, Sherbundy, O.....	Best cockerel .....	1 25
Same .....	2d .....	75
Same .....	Best hen .....	1 25
Thos. Cory, New Carlisle, O.....	2d " .....	75
Julius Frank, Sherbundy, O.....	Best pullet .....	1 25
M. Gammerdinger, Columbus, O.....	2d .....	75
<b>Red Cap.</b>		
Chas. McClave, New London, O.....	Best cock .....	1 25
A. H. Kochensparger, Junction City, O.....	2d " .....	75
Chas. McClave, New London, O.....	Best cockerel .....	1 25
A. H. Kochensparger, Junction City, O.....	2d .....	75
Chas. McClave, New London, O.....	Best hen .....	1 25
M. M. Myers, New Dover, O.....	2d " .....	75
A. H. Kochensparger, Junction City, O.....	Best pullet .....	1 25
Chas. McClave, New London, O.....	2d " .....	75

## CLASS VI — FRENCH.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Houdan.		
H. V. Shoemaker, Ashley, O.....	Best cock .....	\$1 25
Same .....	2d " .....	75
F. D. Bennett, Galena, O.....	Best cockerel .....	1 25
H. V. Shoemaker, Ashley, O.....	2d " .....	75
Same .....	Best hen .....	1 25
F. D. Bennett, Galena, O.....	2d " .....	75
H. V. Shoemaker, Ashley, O.....	Best pullet .....	1 25
F. D. Bennett, Galena, O.....	2d " .....	75
H. V. Shoemaker, Ashley, O.....	Best breeding pen.....	2 00
F. D. Bennett, Galena, O.....	2d " .....	1 00
Crevecœur and La Fleche.		
Eugene Sites, Elyria, O.....	Best cock .....	\$1 25
M. M. Myers, New Dover, O.....	2d " .....	75
Eugene Sites, Elyria, O.....	Best cockerel .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d " .....	75
Eugene Sites, Elyria, O.....	Best hen .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d " .....	75
Same .....	Best pullet .....	1 25
Eugene Sites, Elyria, O.....	2d " .....	75
Same .....	Best breeding pen.....	2 00
Chas. Gammerdinger, Columbus, O.....	2d " .....	1 00

## CLASS VII — DORKING.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Silver Gray Dorking.		
Chas. Gammerdinger, Columbus, O.....	Best cock .....	1 25
Same .....	2d " .....	75
Same .....	Best cockerel .....	1 25
Same .....	Best hen .....	1 25
Same .....	2d " .....	75
Same .....	Best pullet .....	1 25
Colored Dorking.		
Chas. Gammerdinger, Columbus, O.....	Best cock .....	1 25
M. M. Myers, New Dover, O.....	2d " .....	75
Chas. Gammerdinger, Columbus, O.....	Best cockerel .....	1 25
Same .....	Best hen .....	1 25
Same .....	2d " .....	75
Same .....	Best pullet .....	1 25
Same .....	2d " .....	75



## CLASS VIII — GAME.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
<b>Black Breasted Red Game.</b>		
Thos. Cory, New Carlisle, O.....	Best cock .....	\$1 25
J. H. Nepp, Bellaire, O.....	2d " .....	75
Chas. Gammerdinger, Columbus, O.....	Best cockerel .....	1 25
J. H. Nepp, Bellaire, O.....	2d " .....	75
Thos. Cory, New Carlisle, O.....	Best hen .....	1 25
J. H. Neff, Bellaire, O.....	2d " .....	75
A. H. Kochensparger, Junction City, O.....	Best pullet .....	1 25
Same .....	2d " .....	75
Chas. Gammerdinger, Columbus, O.....	Best breeding pen .....	2 00
J. H. Neff, Bellaire, O.....	2d " .....	1 00
<b>Sumatra Game.</b>		
M. M. Myers, New Dover, O.....	Best cock .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d " .....	75
M. M. Myers, New Dover, O.....	Best cockerel .....	1 25
Same .....	2d " .....	75
Same .....	Best hen .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d " .....	75
M. M. Myers, New Dover, O.....	Best pullet .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d " .....	75
Same .....	Best breeding pen .....	2 00
<b>Golden Duck Wing Game.</b>		
Chas. Gammerdinger, Columbus, O.....	Best cock .....	1 25
M. M. Myers, New Dover, O.....	Best cockerel .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d " .....	75
Eugene Sites, Elyria, O.....	Best hen .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d " .....	75
M. M. Myers, New Dover, O.....	Best pullet .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d " .....	75
<b>Silver Duck Wing Game.</b>		
Chas. Gammerdinger, Columbus, O.....	Best cock .....	1 25
Eugene Sites, Elyria, O.....	2d " .....	75
Same .....	Best cockerel .....	1 25
Same .....	2d " .....	75
Same .....	Best hen .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d " .....	75
Eugene Sites, Elyria, O.....	Best pullet .....	1 25
Same .....	2d " .....	75
<b>Red Pile Game.</b>		
Eugene Sites, Elyria, O.....	Best cock .....	1 25
Same .....	2d " .....	75
Same .....	Best cockerel .....	1 25
Same .....	2d " .....	75
Same .....	Best hen .....	1 25
Same .....	2d " .....	75
Same .....	Best pullet .....	1 25
Same .....	2d " .....	75
<b>Cornish Indian Game.</b>		
C. E. & W. Smith, Ashley, O.....	Best cock .....	1 25
D. A. Hennis, Sunbury, O.....	2d " .....	75
C. E. & W. Smith, Ashley, O.....	Best cockerel .....	1 25
D. A. Hennis, Sunbury, O.....	2d " .....	75
F. D. Bennett, Galena, O.....	Best hen .....	1 25
D. A. Hennis, Sunbury, O.....	2d " .....	75
Same .....	Best pullet .....	1 25
F. D. Bennett, Galena, O.....	2d " .....	75
Same .....	Best breeding pen .....	2 00
D. A. Hennis, Sunbury, O.....	2d " .....	1 00

## CLASS IX — GAME BANTAM.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
<b>B. B. R. Bantam.</b>		
Chas. B. Gaylord, Sunbury, O.....	Best cock .....	1 25
Eugene Sites, Elyria, O.....	2d " .....	75
Chas. B. Gaylord, Sunbury, O.....	Best cockerel .....	1 25
G. H. Brown, Mt. Vernon, O.....	2d " .....	75
Eugene Sites, Elyria, O.....	Best hen .....	1 25
Thos. Cory, New Carlisle, O.....	2d " .....	75
G. H. Brown, Mt. Vernon, O.....	Best pullet .....	1 25
Chas. B. Gaylord, Sunbury, O.....	2d " .....	75
<b>Golden Duck Wing Bantam.</b>		
Eugene Sites, Elyria, O.....	Best cock .....	1 25
Thos. Cory, New Carlisle, O.....	2d " .....	75
Eugene Sites, Elyria, O.....	Best hen .....	1 25
W. F. Volk, Westerville, O.....	2d " .....	75
Eugene Sites, Elyria, O.....	Best pullet .....	1 25
<b>Silver Duck Wing Bantam.</b>		
Thos. Cory, New Carlisle, O.....	Best cock .....	1 25
Eugene Sites, Elyria, O.....	2d " .....	75
W. F. Volk, Westerville, O.....	Best cockerel .....	1 25
Eugene Sites, Elyria, O.....	2d " .....	75
Thos. Cory, New Carlisle, O.....	Best hen .....	1 25
Eugene Sites, Elyria, O.....	2d " .....	75
Same .....	Best pullet .....	1 25
Same .....	2d " .....	75
<b>Red Pile Bantam.</b>		
Eugene Sites, Elyria, O.....	Best cock .....	1 25
Chas. McClave, New London, O.....	2d " .....	75
Eugene Sites, Elyria, O.....	Best cockerel .....	1 25
Same .....	2d " .....	75
Same .....	Best hen .....	1 25
Thos. Cory, New Carlisle, O.....	2d " .....	75
Eugene Sites, Elyria, O.....	Best pullet .....	1 25
Same .....	2d " .....	75

## CLASS X — BANTAM (Not Game).

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
<b>Golden Seabright Bantam.</b>		
C. E. & W. Smith, Ashley, O.....	Best cock .....	1 25
W. S. Carle, New Garden, O.....	2d " .....	75
C. E. & W. Smith, Ashley, O.....	Best cockerel .....	1 25
W. S. Carle, New Garden, O.....	2d " .....	75
Same .....	Best hen .....	1 25
Chas. McClave, New London, O.....	2d " .....	75
C. E. & W. Smith, Ashley, O.....	Best pullet .....	1 25
W. S. Carle, New Garden, O.....	2d " .....	75
C. E. & W. Smith, Ashley, O.....	Best breeding pen.....	2 00
W. S. Carle, New Garden, O.....	2d " .....	1 00
<b>Silver Seabright Bantam.</b>		
C. E. & W. Smith, Ashley, O.....	Best cock .....	1 25
Chas. Gammerdinger, Columbus, O.....	2d " .....	75
Dr. G. F. Plotner, West Mansfield, O.....	Best cockerel .....	1 25
J. A. Tucker, Concord, Mich.....	2d " .....	75
C. E. & W. Smith, Ashley, O.....	Best hen .....	1 25
W. F. Volk, Westerville, O.....	2d " .....	75
J. A. Tucker, Concord, Mich.....	Best pullet .....	1 25
Dr. G. F. Plotner, West Mansfield, O.....	2d " .....	75

## CLASS X — BANTAMS (Not Game) — Concluded.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
<b>Buff Cochian Bantam.</b>		
W. F. Volk, Westerville, O.....	Best cock .....	\$1 25
Thos. Cory, New Carlisle, O.....	2d .....	75
Chas. Gammerdinger, Columbus, O.....	Best cockerel .....	1 25
J. A. Tucker, Concord, Mich.....	2d .....	75
Same .....	Best hen .....	1 25
W. F. Volk, Westerville, O.....	2d .....	75
J. A. Tucker, Concord, Mich.....	Best pullet .....	1 25
J. H. Cole & Son, Berkshire, O.....	2d .....	75
W. F. Griffith, Sunbury, O.....	Best breeding pen.....	2 00
<b>White and Black Cochian Bantam.</b>		
W. F. Volk, Westerville, O.....	Best cock .....	1 25
Same .....	2d .....	75
J. A. Tucker, Concord, Mich.....	Best cockerel .....	1 25
W. F. Volk, Westerville, O.....	2d .....	75
Same .....	Best hen .....	1 25
J. A. Tucker, Concord, Mich.....	2d .....	75
Same .....	Best pullet .....	1 25
J. J. Zimmer, Zimmer, O.....	2d .....	75
<b>Black Rose Combed Bantam.</b>		
Chas. McClave, New London, O.....	Best cock .....	\$1 25
Eugene Sites, Elyria, O.....	2d .....	75
Same .....	Best cockerel .....	1 25
Same .....	2d .....	75
Same .....	Best hen .....	1 25
A. H. Kochensparger, Junction City, O.....	2d .....	75
Eugene Sites, Elyria, O.....	Best pullet .....	1 25
Same .....	2d .....	75
<b>Japanese Bantam.</b>		
Chas. Gammerdinger, Columbus, O.....	Best cock .....	1 25
Same .....	Best hen .....	75

## CLASS XI — TURKEYS.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Chas. McClave, New London, O.....	Best bronze, old pair.....	\$2 00
Same .....	Best bronze, young pair.....	2 00
C. H. Bell, Ashley, O.....	Best white, old pair.....	2 00
J. A. Tucker, Concord, Mich.....	2d best white, old pair.....	1 00
C. H. Bell, Ashley, O.....	Best white, young pair.....	2 00
M. M. Myers, New Dover, O.....	2d best white, young pair.....	1 00
Thos. Cory, New Carlisle, O.....	Best buff, old pair.....	2 00
M. M. Myers, New Dover, O.....	2d best buff, old pair.....	1 00
Same .....	Best buff, young pair.....	2 00
Same .....	Best Narraganset, old pair.....	2 00
Same .....	Best Narraganset, young pair.....	2 00
Chas. McClave, New London, O.....	Best black, old pair.....	2 00
M. M. Myers, New Dover, O.....	2d best black, old pair.....	1 00
Chas. McClave, New London, O.....	Best black, young pair.....	2 00
M. M. Myers, New Dover, O.....	2d best black, young pair.....	1 00
Same .....	Best slate, old pair.....	2 00
Chas. McClave, New London, O.....	Best slate, young pair.....	2 00
M. M. Myers, New Dover, O.....	2d best slate, young pair.....	1 00
D. M. Bell, Leonardsburg, O.....	Best wild, old pair.....	2 00

## AQUATIC DIVISION.

## CLASS XII — DUCKS.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Chas. McClave, New London, O.....	Best Pekin, old pair.....	\$2 00
C. E. & W. Smith, Ashley, O.....	2d best Pekin, old pair.....	1 00
Chas. McClave, New London, O.....	Best Pekin, young pair.....	2 00
C. E. & W. Smith, Ashley, O.....	2d best Pekin, young pair.....	1 00
Chas. McClave, New London, O.....	Best Aylesburg, old pair.....	2 00
M. M. Myers, New Dover, O.....	2d best Aylesburg, old pair.....	1 00
Chas. McClave, New London, O.....	Best Aylesburg, young pair.....	2 00
M. M. Myers, New Dover, O.....	2d best Aylesburg, young pair.....	1 00
Same	Best Rouen, old pair.....	2 00
C. E. & W. Smith, Ashley, O.....	2d best Rouen, old pair.....	1 00
M. M. Myers, New Dover, O.....	Best Rouen, young pair.....	2 00
Chas. McClave, New London, O.....	2d best Rouen, young pair.....	1 00
Same	Best Cayuga, old pair.....	2 00
M. M. Myers, New Dover, O.....	2d best Cayuga, old pair.....	1 00
Chas. Gammerdinger, Columbus, O.....	Best Cayuga, young pair.....	2 00
M. M. Myers, New Dover, O.....	Best crested white, old pair.....	2 00
Chas. McClave, New London, O.....	2d best crested white, old pair.....	1 00
Chas. Gammerdinger, Columbus, O.....	Best crested white, young pair.....	2 00
M. M. Myers, New Dover, O.....	2d best crested white, young pair.....	1 00
Chas. McClave, New London, O.....	Best gray call, old pair.....	2 00
M. M. Myers, New Dover, O.....	2d best gray call, old pair.....	1 00
Chas. Gammerdinger, Columbus, O.....	Best gray call, young pair.....	2 00
M. M. Myers, New Dover, O.....	Best white call, old pair.....	2 00
W. F. Volk, Westerville, O.....	2d best white call, old pair.....	1 00
M. M. Myers, New Dover, O.....	Best white call, young pair.....	2 00
Chas. Gammerdinger, Columbus, O.....	2d best white call, young pair.....	1 00
Chas. McClave, New London, O.....	Best Muscovy colored, old pair.....	2 00
M. M. Myers, New London, O.....	2d best Muscovy colored, old pair.....	1 00
Chas. McClave, New London, O.....	Best Muscovy colored, young pair.....	2 00
M. M. Myers, New Dover, O.....	2d best Muscovy colored, young pair.....	1 00
W. F. Volk, Westerville, O.....	Best Muscovy white, old pair.....	2 00
M. M. Myers, New Dover, O.....	2d best Muscovy white, old pair.....	1 00
Chas. McClave, New London, O.....	Best Muscovy white, young pair.....	2 00

## CLASS XIII — GEESE.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
M. M. Myers, New Dover, O.....	Best Toulouse, old pair.....	2 00
J. H. Neff, Bellaire, O.....	2d best Toulouse, old pair.....	1 00
Chas. McClave, New London, O.....	Best Toulouse, young pair.....	2 00
Chas. Gammerdinger, Columbus, O.....	2d best Toulouse, young pair.....	1 00
Chas. McClave, New London, O.....	Best Embden, old pair.....	2 00
M. M. Myers, New Dover, O.....	2d best Embden, old pair.....	1 00
Same	Best Embden, young pair.....	2 00
Same	2d best Embden, young pair.....	1 00
J. H. Cole & Son, Berkshire, O.....	Best African, old pair.....	2 00
M. M. Myers, New Dover, O.....	Best Brown Chinese, old pair.....	2 00
Chas. McClave, New London, O.....	2d best Brown Chinese, old pair.....	1 00
Same	Best Brown Chinese, young pair.....	2 00
M. M. Myers, New Dover, O.....	2d best Brown Chinese, young pair.....	1 00
Same	Best White, old pair.....	2 00
Chas. McClave, New London, O.....	2d best White, old pair.....	1 00
M. M. Myers, New Dover, O.....	Best White, young pair.....	2 00
Chas. McClave, New London, O.....	2d best White, young pair.....	1 00
Thos. Cory, New Carlisle, O.....	Best Wild, old pair.....	2 00
Chas. McClave, New London, O.....	2d best Wild, old pair.....	1 00
Same	Best Wild, young pair.....	2 00
M. M. Myers, New Dover, O.....	2d best Wild, young pair.....	1 00

## CLASS XIV — ORNAMENTAL.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Chas. McClave, New London, O.....	Best pair Swans.....	\$2 00
J. H. Neff, Bellaire, O.....	Best pair Pea Fowls.....	2 00
Chas. McClave, New London, O.....	Best pair Ring Neck Pheasants.....	2 00

## CLASS XV — PIGEONS.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
G. F. Abbe, Columbus, O.....	Best collection .....	\$5 00
Same .....	2d best collection.....	3 00
Same .....	Best 5 pairs Homing Pigeons.....	Medal

## CLASS COLLECTIONS.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Chas. Gammerdinger, Columbus, O.....	American class .....	\$3 00
Same .....	Asiatic class .....	3 00
Same .....	Mediterranean class .....	3 00
M. Gammerdinger, Columbus, .....	Polish class .....	3 00
Julius Frank, Sherbundy, O.....	Hamburg class .....	3 00
Eugene Sites, Elyria, O.....	Games and Game Bantams.....	3 00
W. F. Volk, Westerville, O.....	Bantams not Game.....	3 00
M. M. Myers, New Dover, O.....	Turkeys .....	3 00
Same .....	Geese .....	3 00
Chas. McClave, New London, O.....	Ducks .....	3 00
Chas. Gammerdinger, Columbus, O.....	Best collection poultry.....	Medal
Athens Incubator Co., Athens, O.....	Incubator in operation.....	Medal
Same .....	Brooder in operation.....	Medal

## SIXTH DEPARTMENT.

FARM PRODUCTS—S. H. ELLIS, Member in Charge.

Owner's Name and Postoffice.	Name of Article.	Amount.
Grain, Seeds, Etc.		
H. Bookwalter, Hallsville, O.....	Best 20 lbs. buckwheat flour.....	Medal
F. M. Whipps, Byhalia, O.....	Best peck of Democrat wheat.....	\$2 00
J. L. Keckley, Marysville, O.....	2d best peck of Democrat wheat.....	1 00
F. M. Whipps, Byhalia, O.....	Best peck of Early wheat.....	2 00
J. L. Keckley, Marysville, O.....	2d best peck of Early wheat.....	1 00
F. M. Whipps, Byhalia, O.....	Best peck of Fulcaster wheat.....	2 00
J. L. Keckley, Marysville, O.....	2d best peck of Fulcaster wheat.....	1 00
Same.....	Best peck of Fultz wheat.....	2 00
W. D. Whipps, Marion, O.....	2d best peck of Fultz wheat.....	1 00
Albert Pearce, Ridgeville, O.....	Best peck of Golden Cross wheat.....	2 00
W. D. Whipps, Marion, O.....	2d best peck of Golden Cross wheat.....	1 00
I. B. Keckley, Marysville, O.....	Best peck of Jones Winter Fife wheat...	2 00
J. L. Keckley, Marysville, O.....	2d best peck of Jones Winter Fife wheat...	1 00
I. B. Keckley, Marysville, O.....	Best peck of Mediterranean wheat.....	2 00
J. L. Keckley, Marysville, O.....	2d best peck of Mediterranean wheat.....	1 00
Same.....	Best peck of Nigger wheat.....	2 00
I. B. Keckley, Marysville, O.....	2d best peck of Nigger wheat.....	1 00
Same.....	Best peck of Ontario wheat.....	2 00
F. M. Whipps, Byhalia, O.....	2d best peck of Ontario wheat.....	1 00
S. B. McFarland, Sunbury, O.....	Best peck of Wonder wheat.....	2 00
J. L. Keckley, Marysville, O.....	2d best peck of Wonder wheat.....	1 00
Kent & Wilson, Newark, O.....	Best peck of Poole wheat.....	2 00
Powell & Adams, Newark, O.....	2d best peck of Poole wheat.....	1 00
Albert Pearce, Ridgeville, O.....	Best peck of Reedy wheat.....	2 00
F. M. Whipps, Byhalia, O.....	2d best peck of Reedy wheat.....	1 00
W. D. Whipps, Marion, O.....	Best peck of Royal Australian wheat....	2 00
I. B. Keckley, Marysville, O.....	2d best peck of Royal Australian wheat...	1 00
I. B. Keckley, Marysville, O.....	Best peck of Valley wheat.....	2 00
J. L. Keckley, Marysville, O.....	2d best peck of Valley wheat.....	1 00
I. B. Keckley, Marysville, O.....	Best peck of Velvet Chaff wheat.....	2 00
J. L. Keckley, Marysville, O.....	2d best peck of Velvet Chaff wheat.....	1 00
Same.....	Best peck of Wyandotte Red wheat.....	2 00
F. M. Whipps, Byhalia, O.....	2d best peck of Wyandotte Red wheat....	1 00
Same.....	Best peck of Black Norway oats.....	1 50
J. L. Keckley, Marysville, O.....	2d best peck of Black Norway oats.....	75
I. B. Keckley, Marysville, O.....	Best peck of Black Tartarian oats.....	1 50
J. L. Keckley, Marysville, O.....	2d best peck of Black Tartarian oats.....	75
C. E. Leavitt, Mechanicsburg, O.....	Best peck of Drogheda oats.....	1 50
W. D. Whipps, Marion, O.....	2d best peck of Drogheda oats.....	75
Same.....	Best peck of Improved American oats....	1 50
J. L. Keckley, Marysville, O.....	2d best peck of Improved American oats...	75
Same.....	Best peck of Race Horse oats.....	1 50
C. E. Leavitt, Mechanicsburg, O.....	2d best peck of Race Horse oats.....	75
F. M. Whipps, Byhalia, O.....	Best peck of Seizure oats.....	1 50
C. E. Leavitt, Mechanicsburg, O.....	2d best peck of Seizure oats.....	75
J. L. Keckley, Marysville, O.....	Best peck of Welcome oats.....	1 50
W. D. Whipps, Marion, O.....	2d best peck of Welcome oats.....	75
F. M. Whipps, Byhalia, O.....	Best peck of White Wonder oats.....	1 50
J. L. Keckley, Marysville, O.....	2d best peck of White Wonder oats.....	75
Same.....	Best peck of White California oats.....	1 50
F. M. Whipps, Byhalia, O.....	2d best peck of White California oats....	75
J. L. Keckley, Marysville, O.....	Best peck of White Superior Scotch oats..	1 50
C. E. Leavitt, Mechanicsburg, O.....	2d best peck of White Superior Scotch oats	75
J. L. Keckley, Marysville, O.....	Best peck of Winter rye.....	2 00
W. D. Whipps, Marion, O.....	2d best peck of Winter rye.....	1 00
Powell & Adams, Newark, O.....	Best peck of Winter barley.....	2 00
J. L. Keckley, Marysville, O.....	2d best peck of Winter barley.....	1 00
Powell & Adams, Newark, O.....	Best peck of Spring barley.....	2 00
J. L. Keckley, Marysville, O.....	2d best peck of Spring barley.....	1 00
F. M. Whipps, Byhalia, O.....	Best peck of Silver-hull buckwheat.....	2 00
J. L. Keckley, Marysville, O.....	2d best peck of Silver-hull buckwheat.....	1 00
Same.....	Best peck of Japanese buckwheat.....	2 00
F. M. Whipps, Byhalia, O.....	2d best peck of Japanese buckwheat.....	1 00
I. B. Keckley, Marysville, O.....	Best peck of Russian flax seed.....	2 00
J. L. Keckley, Marysville, O.....	2d best peck of Russian flax seed.....	1 00
George Marsh, Dayton, O.....	Best peck of Common flax seed.....	2 00
F. M. Whipps, Byhalia, O.....	2d best peck of Common flax seed.....	1 00
J. L. Keckley, Marysville, O.....	Best peck of Timothy seed.....	2 00
C. E. Leavitt, Mechanicsburg, O.....	2d best peck of Timothy seed.....	1 00
J. L. Keckley, Marysville, O.....	Best peck of Kentucky Blue Grass seed..	2 00
W. D. Whipps, Marion, O.....	2d best peck of Kentucky Blue Grass seed	1 00
Albert Pearce, Ridgeville, O.....	Best peck of Mammoth clover seed.....	2 00
C. E. Leavitt, Mechanicsburg, O.....	2d best peck of Mammoth clover seed.....	1 00

## FARM PRODUCTS — Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Powell & Adams, Newark, O.....	Best peck of Common clover seed.....	2 00
S. B. McFarland, Sunbury, O.....	2d best peck of Common clover seed.....	1 00
George Marsh, Dayton, O.....	Best peck of Alsike clover seed.....	2 00
F. M. Whipps, Byhalia, O.....	Best peck of Crimson clover seed.....	2 00
Albert Pearce, Ridgeville, O.....	2d best peck of Crimson clover seed.....	1 00
W. D. Whipps, Marion, O.....	Best peck of Orchard grass seed.....	2 00
F. M. Whipps, Byhalia, O.....	2d best peck of Orchard grass seed.....	1 00
J. L. Keckley, Marysville, O.....	Best peck of Red Top grass seed.....	2 00
I. B. Keckley, Marysville, O.....	2d best peck of Red Top grass seed.....	1 00
Powell & Adams, Newark, O.....	Best peck of Millet seed.....	2 00
F. M. Whipps, Byhalia, O.....	2d best peck of Millet seed.....	1 00
J. L. Keckley, Marysville, O.....	Best peck of Hungarian grass seed.....	2 00
Albert Pearce, Ridgeville, O.....	2d best peck of Hungarian grass seed.....	1 00
F. M. Whipps, Byhalia, O.....	Best display of grain in straw.....	5 00
J. L. Keckley, Marysville, O.....	2d best display of grain in straw.....	3 00
F. M. Whipps, Byhalia, O.....	Best display of grasses and sedges.....	3 00
L. M. Gregg, Dayton, O.....	2d best display of grasses and sedges.....	2 00
Shelled Beans.		
Albert Pearce, Ridgeville, O.....	Best two quarts of Lima beans.....	1 00
W. D. Whipps, Marion, O.....	2d best two quarts of Lima beans.....	50
Same.....	Best two quarts of Marrowfat beans.....	1 00
Albert Pearce, Ridgeville, O.....	2d best two quarts of Marrowfat beans.....	50
F. M. Whipps, Byhalia, O.....	Best two quarts of Navy beans.....	1 00
J. L. Keckley, Marysville, O.....	2d best two quarts of Navy beans.....	50
Albert Pearce, Ridgeville, O.....	Best two quarts of Golden Wax beans.....	1 00
Powell & Adams, Newark, O.....	2d best two quarts of Golden Wax beans.....	50
J. L. Keckley, Marysville, O.....	Best two quarts of White Kidney beans.....	1 00
I. B. Keckley, Marysville, O.....	2d best two quarts of White Kidney beans.....	50
Powell & Adams, Newark, O.....	Best two quarts of Red Kidney beans.....	1 00
J. L. Keckley, Marysville, O.....	2d best two quarts of Red Kidney beans.....	50
Same.....	Best half peck of Marrowfat field peas.....	2 00
W. D. Whipps, Marion, O.....	2d best half peck of Marrowfat field peas.....	1 00
J. L. Keckley, Marysville, O.....	Best half peck of Canada field peas.....	3 00
F. M. Whipps, Byhalia, O.....	2d best half peck of Canada field peas.....	1 00
Tobacco.		
Powell & Adams, Newark, O.....	Best four hands Ohio Seed Leaf.....	3 00
D. F. Corwin, Springboro, O.....	2d best four hands Ohio Seed Leaf.....	1 00
Albert Pearce, Ridgeville, O.....	Best four hands White Burley.....	3 00
Powell & Adams, Newark, O.....	2d best four hands White Burley.....	1 00
D. F. Corwin, Springboro, O.....	Best four hands Little Dutch.....	3 00
L. M. Gregg, Dayton, O.....	2d best four hands Little Dutch.....	1 00
D. F. Corwin, Springboro, O.....	Best four hands Zimmer's Spanish.....	3 00
Powell & Adams, Newark, O.....	2d best four hands Zimmer's Spanish.....	1 00
Corn.		
J. L. Keckley, Marysville, O.....	Best twelve ears yellow field corn.....	3 00
Powell & Adams, Newark, O.....	2d best twelve ears yellow field corn.....	2 00
W. D. Whipps, Marion, O.....	Best twelve ears white field corn.....	3 00
Powell & Adams, Newark, O.....	2d best twelve ears white field corn.....	2 00
I. B. Keckley, Marysville, O.....	Best twelve ears any other color field corn.....	3 00
J. L. Keckley, Marysville, O.....	2d best twelve ears any other color f'd corn.....	2 00
W. D. Whipps, Marion, O.....	Best twelve ears yellow flint corn.....	3 00
J. L. Keckley, Marysville, O.....	2d best twelve ears yellow flint corn.....	2 00
W. D. Whipps, Marion, O.....	Best twelve ears white flint corn.....	3 00
F. M. Whipps, Byhalia, O.....	2d best twelve ears white flint corn.....	2 00
Albert Pearce, Ridgeville, O.....	Best twelve ears Rice pop corn.....	3 00
Powell & Adams, Newark, O.....	2d best twelve ears Rice pop corn.....	1 00
J. L. Keckley, Marysville, O.....	Best twelve ears Golden Queen pop corn.....	2 00
W. D. Whipps, Marion, O.....	2d best twelve ears Golden Queen pop corn.....	1 00
F. M. Whipps, Byhalia, O.....	Best twelve ears any other variety pop c'n.....	3 00
J. L. Keckley, Marysville, O.....	2d best twelve ears any other variety pop c'n.....	1 00
Same.....	Best display field corn.....	10 00
Powell & Adams, Newark, O.....	2d best display field corn.....	5 00
J. L. Keckley, Marysville, O.....	Best display sweet corn.....	5 00
Powell & Adams, Newark, O.....	2d best display sweet corn.....	3 00
J. L. Keckley, Marysville, O.....	Best display corn on stalk.....	3 00
Powell & Adams, Newark, O.....	2d best display corn on stalk.....	4 00
L. M. Gregg, Dayton, O.....	Best twenty pounds broom corn.....	2 00
Powell & Adams, Newark, O.....	2d best twenty pounds broom corn.....	1 00

## FARM PRODUCTS — Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Potatoes and other Root Products.		
Peck of each variety.		
Powell & Adams, Newark, O.	Best Alexander Prolific.....	1 50
Kent & Wilson, Newark, O.	2d best Alexander Prolific.....	1 00
Same	Best American Wonder.....	1 50
J. L. Keckley, Marysville, O.	2d best American Wonder.....	1 00
Powell & Adams, Newark, O.	Best American Giant.....	1 50
Kent & Wilson, Newark, O.	2d best American Giant.....	1 00
Powell & Adams, Newark, O.	Best Banner.....	1 50
F. M. Whipps, Byhalia, O.	2d best Banner.....	1 00
J. L. Keckley, Marysville, O.	Best Beauty of Hebron.....	1 50
Kent & Wilson, Newark, O.	2d best Beauty of Hebron.....	1 00
Powell & Adams, Newark, O.	Best Bliss Triumph.....	1 50
J. L. Keckley, Marysville, O.	2d best Bliss Triumph.....	1 00
Same	Best Blush.....	1 50
F. M. Whipps, Byhalia, O.	2d best Blush.....	1 00
Powell & Adams, Newark, O.	Best Brownell's Best.....	1 50
Kent & Wilson, Newark, O.	2d best Brownell's Best.....	1 00
J. L. Keckley, Marysville, O.	Best Burbank Seedling.....	1 50
Kent & Wilson, Newark, O.	2d best Burbank Seedling.....	1 00
Powell & Adams, Newark, O.	Best Burpee Early.....	1 50
I. B. Keckley, Marysville, O.	2d best Burpee Early.....	1 00
J. L. Keckley, Marysville, O.	Best Carman No. 2.....	1 50
Kent & Wilson, Newark, O.	2d best Carman No. 2.....	1 00
W. D. Whipps, Marion, O.	Best Chicago Market.....	1 50
J. L. Keckley, Marysville, O.	2d best Chicago Market.....	1 00
Powell & Adams, Newark, O.	Best Clark's No. 1.....	1 50
M. J. Leavitt, Mechanicsburg, O.	2d best Clark's No. 1.....	1 00
Kent & Wilson, Newark, O.	Best Dunmore Seedling.....	1 50
Powell & Adams, Newark, O.	2d best Dunmore Seedling.....	1 00
Same	Best Early Mayflower.....	1 50
Kent & Wilson, Newark, O.	2d best Early Mayflower.....	1 00
Powell & Adams, Newark, O.	Best Early Northern.....	1 50
M. J. Leavitt, Mechanicsburg, O.	2d best Early Northern.....	1 00
I. B. Keckley, Marysville, O.	Best Early Ohio.....	1 50
J. L. Keckley, Marysville, O.	2d best Early Ohio.....	1 00
Kent & Wilson, Newark, O.	Best Early Puritan.....	1 50
Powell & Adams, Newark, O.	2d best Early Puritan.....	1 00
J. L. Keckley, Marysville, O.	Best Early Rose.....	1 50
Powell & Adams, Newark, O.	2d best Early Rose.....	1 00
Same	Best Early Sunrise.....	1 50
J. L. Keckley, Marysville, O.	2d best Early Sunrise.....	1 00
Same	Best El Passo.....	1 50
F. M. Whipps, Byhalia, O.	2d best El Passo.....	1 00
Kent & Wilson, Newark, O.	Best Empire State.....	1 50
F. M. Whipps, Byhalia, O.	2d best Empire State.....	1 00
I. B. Keckley, Marysville, O.	Best Everett.....	1 50
J. L. Keckley, Marysville, O.	2d best Everett.....	1 00
Same	Best Freeman.....	1 50
Powell & Adams, Newark, O.	2d best Freeman.....	1 00
Same	Best Green Mountain.....	1 50
J. L. Keckley, Marysville, O.	2d best Green Mountain.....	1 00
Same	Best Jumbo.....	1 50
Kent & Wilson, Newark, O.	2d best Jumbo.....	1 00
M. J. Leavitt, Mechanicsburg, O.	Best King of the Rose.....	1 50
Kent & Wilson, Newark, O.	2d best King of the Rose.....	1 00
Powell & Adams, Newark, O.	Best Late Rose.....	1 50
J. L. Keckley, Marysville, O.	2d best Late Rose.....	1 00
Powell & Adams, Newark, O.	Best Lee's Favorite.....	1 50
J. L. Keckley, Marysville, O.	Best Monroe Seedling.....	1 50
Powell & Adams, Newark, O.	2d best Monroe Seedling.....	1 00
C. E. Leavitt, Mechanicsburg, O.	Best New Queen.....	1 50
M. J. Leavitt, Mechanicsburg, O.	2d best New Queen.....	1 00
J. L. Keckley, Marysville, O.	Best Polaris.....	1 50
Kent & Wilson, Newark, O.	2d best Polaris.....	1 00
J. L. Keckley, Marysville, O.	Best Potentate.....	1 50
Powell & Adams, Newark, O.	2d best Potentate.....	1 00
J. L. Keckley, Marysville, O.	Best Puritan.....	1 50
Powell & Adams, Newark, O.	2d best Puritan.....	1 00
Same	Best Queen of the Valley.....	1 50
F. M. Whipps, Byhalia, O.	2d best Queen of the Valley.....	1 00
Kent & Wilson, Newark, O.	Best Rural New Yorker No. 2.....	1 50
Powell & Adams, Newark, O.	2d best Rural New Yorker No. 2.....	1 00
Albert Pearce, Ridgeville, )	Best Seneca Beauty.....	1 50
F. M. Whipps, Byhalia, O.	2d best Seneca Beauty.....	1 00
Powell & Adams, Newark, O.	Best Sir William.....	1 50
Kent & Wilson, Newark, O.	2d best Sir William.....	1 00
Same	Best State of Maine.....	1 50



## FARM PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Potatoes and other Root Products—Continued.		
Powell & Adams, Newark, O.....	2d best State of Maine.....	1 00
Same	Best Summit.....	1 50
Kent & Wilson, Newark, O.....	2d best Summit.....	1 00
Same	Best Vaughn.....	1 50
Powell & Adams, Newark, O.....	2d best Vaughn.....	1 00
Same	Best Victor Rose.....	1 50
C. E. Leavitt, Mechanicsburg, O.....	2d best Victor Rose.....	1 00
Same	Best White Elephant.....	1 50
Powell & Adams, Newark, O.....	2d best White Elephant.....	1 00
J. L. Keckley, Marysville, O.....	Best White Seneca.....	1 50
Kent & Wilson, Newark, O.....	2d best White Seneca.....	1 00
J. L. Keckley, Marysville, O.....	Best White Star.....	1 50
Kent & Wilson, Newark, O.....	2d best White Star.....	1 00
J. L. Keckley, Marysville, O.....	Best World's Fair.....	1 50
Powell & Adams, Newark, O.....	2d best World's Fair.....	1 00
Same	Best peck new variety.....	3 00
Albert Pearce, Ridgeville, O.....	2d best peck new variety.....	2 00
Powell & Adams, Newark, O.....	Best display Irish potatoes.....	10 00
Kent & Wilson, Newark, O.....	2d best display Irish potatoes.....	6 00
Powell & Adams, Newark, O.....	Best peck yellow sweet potatoes.....	1 50
E. G. Stockman, Prospect, O.....	2d best peck of yellow sweet potatoes.....	1 00
Kent & Wilson, Newark, O.....	Best peck of red Jersey sweet potatoes.....	1 50
Theo. Neff, Bellaire, O.....	2d best peck of red Jersey sweet potatoes.....	1 00
Kent & Wilson, Newark, O.....	Best peck of yellow Jersey sweet potatoes.....	1 50
Albert Pearce, Ridgeville, O.....	2d best peck of yellow Jersey sweet potatoes.....	1 00
Powell & Adams, Newark, O.....	Best display of sweet potatoes.....	1 50
Kent & Wilson, Newark, O.....	2d best display of sweet potatoes.....	1 00
F. M. Whipps, Byhalia, O.....	Best twelve parsnips.....	2 00
J. L. Keckley, Marysville, O.....	2d best twelve parsnips.....	1 00
F. M. Whipps, Byhalia, O.....	Best twelve Danvers carrots.....	2 00
Albert Pearce, Ridgeville, O.....	2d best twelve Danvers carrots.....	1 00
Same	Best twelve Long Orange carrots.....	2 00
Kent & Wilson, Newark, O.....	2d best twelve Long Orange carrots.....	1 00
Albert Pearce, Ridgeville, O.....	Best twelve any other variety carrots.....	2 00
Powell & Adams, Newark, O.....	2d best twelve any other variety carrots.....	1 00
Albert Pearce, Ridgeville, O.....	Best display of carrots.....	3 00
Powell & Adams, Newark, O.....	2d best display of carrots.....	2 00
Same	Best twelve roots salsify.....	2 00
Kent & Wilson, Newark, O.....	2d best twelve roots salsify.....	1 00
W. D. Whipps, Marion, O.....	Best six Eclipse beets.....	1 50
Albert Pearce, Ridgeville, O.....	2d best six Eclipse beets.....	75
Powell & Adams, Newark, O.....	Best six extra early Bassino beets.....	1 50
Kent & Wilson, Newark, O.....	2d best six extra early Bassino beets.....	75
Powell & Adams, Newark, O.....	Best six early turnip beets.....	1 50
Kent & Wilson, Newark, O.....	2d best six early turnip beets.....	75
Same	Best six sugar beets.....	1 50
Powell & Adams, Newark, O.....	2d best six sugar beets.....	75
J. L. Keckley, Marysville, O.....	Best six long red mangel wurzels.....	1 50
Theo. Neff, Bellaire, O.....	2d best six long red mangel wurzels.....	75
J. L. Keckley, Marysville, O.....	Best six red mangel wurzels.....	1 50
Theo. Neff, Bellaire, O.....	2d best six red mangel wurzels.....	75
Albert Pearce, Ridgeville, O.....	Best six Golden Tankard mangel wurzels.....	1 50
Theo. Neff, Bellaire, O.....	2d best six Golden Tankard mangel wurzels.....	75
J. L. Keckley, Marysville, O.....	Best display of beets.....	5 00
Albert Pearce, Ridgeville, O.....	2d best display of beets.....	3 00
J. L. Keckley, Marysville, O.....	Best six Kohlrabi.....	1 50
Theo. Neff, Bellaire, O.....	2d best six Kohlrabi.....	75
Albert Pearce, Ridgeville, O.....	Best six rutabagas.....	1 50
John Pearce, Field's Corners, O.....	2d best six rutabagas.....	75
Powell & Adams, Newark, O.....	Best peck purple top turnips.....	1 50
F. M. Whipps, Byhalia, O.....	2d best peck purple top turnips.....	75
Powell & Adams, Newark, O.....	Best peck white top turnips.....	1 50
Kent & Wilson, Newark, O.....	2d best peck white top turnips.....	75
C. E. Leavitt, Mechanicsburg, O.....	Best peck red Weatherfield onions.....	1 50
M. J. Leavitt, Mechanicsburg, O.....	2d best peck red Weatherfield onions.....	75
J. L. Keckley, Marysville, O.....	Best peck red Globe onions.....	1 50
Powell & Adams, Newark, O.....	2d best peck red Globe onions.....	75
J. L. Keckley, Marysville, O.....	Best peck yellow Danvers onions.....	1 50
W. D. Whipps, Marion, O.....	2d best peck yellow Danvers onions.....	75
J. L. Keckley, Marysville, O.....	Best peck yellow Globe onions.....	1 50
W. D. Whipps, Marion, O.....	2d best peck yellow Globe onions.....	75
J. L. Keckley, Marysville, O.....	Best peck white Globe onions.....	1 50
Powell & Adams, Newark, O.....	2d best peck white Globe onions.....	75
Same	Best peck Giant Rocca onions.....	1 50
F. M. Whipps, Byhalia, O.....	2d best peck Giant Rocca onions.....	75
Powell & Adams, Newark, O.....	Best peck Potato onions.....	1 50

## FARM PRODUCTS — Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Potatoes and other Root Products — Concluded.		
F. M. Whipps, Byhalia, O.....	2d best peck Potato onions.....	75
J. L. Keckley, Marysville, O.....	Best peck Prize-taker onions.....	1 50
Powell & Adams, Newark, O.....	2d best peck Prize-taker onions.....	75
Same.....	Best display of onions.....	5 00
F. M. Whipps, Byhalia, O.....	2d best display of onions.....	8 00
Vegetables.		
W. D. Whipps, Marion, O.....	Best peck Acme tomatoes.....	1 50
Albert Pearce, Ridgeville, O.....	2d best peck Acme tomatoes.....	75
Powell & Adams, Newark, O.....	Best peck Atlantic Prize tomatoes.....	1 50
Same.....	Best peck Cumberland Red tomatoes.....	1 50
Kent & Wilson, Newark, O.....	2d best peck Cumberland Red tomatoes.....	75
Theo. Neff, Bellaire, O.....	Best peck Dwarf Champion tomatoes.....	1 50
Powell & Adams, Newark, O.....	2d best peck Dwarf Champion tomatoes.....	75
Same.....	Best peck Favorite tomatoes.....	1 50
Kent & Wilson, Newark, O.....	2d best peck Favorite tomatoes.....	75
Albert Pearce, Ridgeville, O.....	Best peck Golden Queen tomatoes.....	1 50
Powell & Adams, Newark, O.....	2d best peck Golden Queen tomatoes.....	75
Theo. Neff, Bellaire, O.....	Best peck Ignotum tomatoes.....	1 50
Powell & Adams, Newark, O.....	2d best peck Ignotum tomatoes.....	75
F. M. Whipps, Byhalia, O.....	Best peck Livingston Beauty tomatoes.....	1 50
Powell & Adams, Newark, O.....	2d best peck Livingston Beauty tomatoes.....	75
Same.....	Best peck Perfection tomatoes.....	1 50
Kent & Wilson, Newark, O.....	2d best peck Perfection tomatoes.....	75
Same.....	Best peck Ponderose tomatoes.....	1 50
Powell & Adams, Newark, O.....	2d best peck Ponderose tomatoes.....	75
Albert Pearce, Ridgeville, O.....	Best peck The Stone Tomatoes.....	1 50
Powell & Adams, Newark, O.....	2d best peck The Stone Tomatoes.....	75
Same.....	Best display of tomatoes.....	4 00
Albert Pearce, Ridgeville, O.....	2d best display of tomatoes.....	2 00
Kent & Wilson, Newark, O.....	Best four heads All Seasons cabbage.....	1 50
Powell & Adams, Newark, O.....	2d best four heads All Seasons cabbage.....	75
Kent & Wilson, Newark, O.....	Best four heads Dutch winter cabbage.....	1 50
Powell & Adams, Newark, O.....	2d best four heads Dutch winter cabbage.....	75
Same.....	Best four heads Wakefield cabbage.....	1 50
Kent & Wilson, Newark, O.....	2d best four heads Wakefield cabbage.....	75
F. M. Whipps, Byhalia, O.....	Best four heads Flat Dutch cabbage.....	1 50
Kent & Wilson, Newark, O.....	2d best four heads Flat Dutch cabbage.....	75
Theo. Neff, Bellaire, O.....	Best four heads Marblehead cabbage.....	1 50
Kent & Wilson, Newark, O.....	2d best four heads Marblehead cabbage.....	75
Same.....	Best four heads Sure Head cabbage.....	1 50
F. M. Whipps, Byhalia, O.....	2d best four heads Sure Head cabbage.....	75
Kent & Wilson, Newark, O.....	Best four heads Winningstadt cabbage.....	1 50
Powell & Adams, Newark, O.....	2d best four heads Winningstadt cabbage.....	75
Theo. Neff, Bellaire, O.....	Best heaviest head of cabbage.....	1 50
Powell & Adams, Newark, O.....	2d best heaviest head of cabbage.....	75
J. L. Keckley, Marysville, O.....	Best four heads Lenormand's cauliflower.....	1 50
F. M. Whipps, Byhalia, O.....	2d best four heads Lenormand's cauliflower.....	75
J. L. Keckley, Marysville, O.....	Best four heads Early Snowball cauliflower.....	1 50
F. M. Whipps, Byhalia, O.....	2d best four heads Early Snowball cauliflower.....	75
Powell & Adams, Newark, O.....	Best four heads Early Paris cauliflower.....	1 50
J. L. Keckley, Marysville, O.....	Best four heads any other variety cauliflower.....	1 50
F. M. Whipps, Byhalia, O.....	2d best four heads any other variety cauliflower.....	75
Theo. Neff, Bellaire, O.....	Best display of celery.....	2 00
Powell & Adams, Newark, O.....	2d best display of celery.....	1 00
Same.....	Best display of peppers.....	2 00
Kent & Wilson, Newark, O.....	2d best display of peppers.....	1 00
F. M. Whipps, Byhalia, O.....	Best three Boston Marrow squashes.....	1 50
Powell & Adams, Newark, O.....	2d best three Boston Marrow squashes.....	75
Same.....	Best three Brazil Sugar squashes.....	1 50
Kent & Wilson, Newark, O.....	Best three Essex Hybrid squashes.....	1 50
Powell & Adams, Newark, O.....	2d best three Essex Hybrid squashes.....	75
F. M. Whipps, Byhalia, O.....	Best three Ford Hook squashes.....	1 50
Powell & Adams, Newark, O.....	2d best three Ford Hook squashes.....	75
Same.....	Best three Giant Yellow Crookneck squash.....	1 50
Kent & Wilson, Newark, O.....	2d best three Giant Yellow Crookneck sq.....	75
F. M. Whipps, Byhalia, O.....	Best three Hubbard squashes.....	1 50
Powell & Adams, Newark, O.....	2d best three Hubbard squashes.....	75
Same.....	Best three Perfect Gem squashes.....	1 50
J. L. Keckley, Marysville, O.....	2d best three Perfect Gem squashes.....	75
Powell & Adams, Newark, O.....	Best three Pike's Peak squashes.....	1 50
Kent & Wilson, Newark, O.....	2d best three Pike's Peak squashes.....	75
Powell & Adams, Newark, O.....	Best display of squashes.....	4 00
Kent & Wilson, Newark, O.....	2d best display of squashes.....	2 00
Powell & Adams, Newark, O.....	Best heaviest squash.....	1 50

## FARM PRODUCTS — Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
<b>Vegetables — Concluded.</b>		
F. M. Whipps, Byhalia, O.....	2d best heaviest squash.....	75
Same.....	Best three common pumpkins.....	1 50
Powell & Adams, Newark, O.....	2d best three common pumpkins.....	75
Same.....	Best three sweet pumpkins.....	1 50
F. M. Whipps, Byhalia, O.....	2d best three sweet pumpkins.....	75
Powell & Adams, Newark, O.....	Best three largest pumpkins.....	1 50
Albert Pearce, Ridgeville, O.....	2d best three largest pumpkins.....	75
Powell & Adams, Newark, O.....	Best display of pumpkins.....	2 00
Kent & Wilson, Newark, O.....	2d best display of pumpkins.....	1 00
Powell & Adams, Newark, O.....	Best three Cuban Queen watermelons.....	1 50
J. L. Keckley, Marysville, O.....	2d best three Cuban Queen watermelons.....	75
Powell & Adams, Newark, O.....	Best three Ice Cream watermelons.....	1 50
Kent & Wilson, Newark, O.....	2d best three Ice Cream watermelons.....	75
Same.....	Best three Kolb Gem watermelons.....	1 50
Powell & Adams, Newark, O.....	2d best three Kolb Gem watermelons.....	75
C. H. Long, West Jefferson, O.....	Best three Florida Favorite watermelons.....	1 50
Kent & Wilson, Newark, O.....	Best three Phinney's Early watermelons.....	1 50
F. M. Whipps, Byhalia, O.....	2d best three Phinney's Early watermelons.....	75
Kent & Wilson, Newark, O.....	Best three Peerless watermelons.....	1 50
F. M. Whipps, Byhalia, O.....	2d best three Peerless watermelons.....	75
Kent & Wilson, Newark, O.....	Best three Sweet Heart watermelons.....	1 50
F. M. Whipps, Byhalia, O.....	2d best three Sweet Heart watermelons.....	75
J. L. Keckley, Marysville, O.....	Best three heaviest watermelons.....	1 50
F. M. Whipps, Byhalia, O.....	2d best three heaviest watermelons.....	75
C. H. Long, West Jefferson, O.....	Best display of watermelons.....	4 00
Powell & Adams, Newark, O.....	2d best display of watermelons.....	2 00
F. M. Whipps, Byhalia, O.....	Best display of muskmelons.....	4 00
Kent & Wilson, Newark, O.....	2d best display of muskmelons.....	2 00
Powell & Adams, Newark, O.....	Best display of cucumbers.....	2 00
Albert Pearce, Ridgeville, O.....	2d best display of cucumbers.....	1 00
Powell & Adams, Newark, O.....	Best three purple egg plants.....	2 00
F. M. Whipps, Byhalia, O.....	2d best three purple egg plants.....	1 00
Albert Pearce, Ridgeville, O.....	Best twelve ears early sweet corn.....	1 50
Powell & Adams, Newark, O.....	2d best twelve ears early sweet corn.....	75
F. M. Whipps, Byhalia, O.....	Best twelve ears late sweet corn.....	1 50
W. D. Whipps, Marion, O.....	2d best twelve ears late sweet corn.....	75
Powell & Adams, Newark, O.....	Best display of vegetables.....	20 00
Kent & Wilson, Newark, O.....	2d best display of vegetables.....	10 00
<b>County Exhibits of Farm Products.</b>		
J. L. Keckley, Marysville, O.....	Best exhibit of farm products.....	125 00
Powell & Adams, Newark, O.....	2d best exhibit of farm products.....	100 00
W. D. Whipps, Marion, O.....	3d best exhibit of farm products.....	75 00
Kent & Wilson, Newark, O.....	4th best exhibit of farm products.....	50 00
George Marsh, Dayton, O.....	5th best exhibit of farm products.....	30 00
Albert Pearce, Ridgeville, O.....	6th best exhibit of farm products.....	20 00
To the above, Armour's Fertilizer Works of Chicago, Ill., added One Hundred Dollars, as follows:		
J. L. Keckley, Marysville, O.....	To county exhibit receiving first award...	50 00
Powell & Adams, Newark, O.....	To county exhibit receiving second award...	30 00
W. D. Whipps, Marion, O.....	To county exhibit receiving third award...	20 00
<b>Bees and Honey.</b>		
H. Besse, M. D., Delaware, O.....	Best display comb honey.....	10 00
Jessie Goodrich, Worthington, O.....	2d best display comb honey.....	5 00
H. Besse, M. D., Delaware, O.....	Best case white clover honey.....	3 00
Jessie Goodrich, Worthington, O.....	2d best case white clover honey.....	2 00
Same.....	Best case bass-wood comb honey.....	3 00
H. Besse, M. D., Delaware, O.....	2d best case bass-wood comb honey.....	2 00
Jessie Goodrich, Worthington, O.....	Best case comb honey from fall flowers.....	3 00
H. Besse, M. D., Delaware, O.....	2d best case comb honey from fall flowers.....	2 00
Jessie Goodrich, Worthington, O.....	Best twelve pounds extracted honey.....	3 00
H. Besse, M. D., Delaware, O.....	2d best twelve pounds extracted honey.....	2 00
Jessie Goodrich, Worthington, O.....	Best display extracted honey.....	10 00
H. Besse, M. D., Delaware, O.....	2d best display extracted honey.....	5 00
Jessie Goodrich, Worthington, O.....	Best display candied honey.....	5 00
H. Besse, M. D., Delaware, O.....	2d best display candied honey.....	3 00
Jessie Goodrich, Worthington, O.....	Best display beeswax.....	2 00
H. Besse, M. D., Delaware, O.....	2d best display beeswax.....	1 00
C. E. Leavitt, Mechanicsburg, O.....	Best nucleus Italian bees.....	2 00
H. Besse, M. D., Delaware, O.....	2d best nucleus Italian bees.....	2 00
Same.....	Best display comb foundation.....	2 00

## FARM PRODUCTS — Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
<b>Bees and Honey — Concluded.</b>		
Jessie Goodrich, Worthington, O.....	Best display honey, comb and extracted..	15 00
H. Besse, M. D., Delaware, O.....	2d best display honey, comb and extracted	8 00
<b>Maple Products.</b>		
O. B. Newcomb, Parkman, O.....	Best gallon maple syrup.....	3 00
Mrs. E. G. Taggart, Lewis Center, O.....	2d best gallon maple syrup.....	2 00
O. B. Newcomb, Parkman, O.....	Best three bricks maple sugar.....	3 00
Clinton Goodwin, Chardon, O.....	2d best three bricks maple sugar.....	2 00
Mrs. E. G. Taggart, Lewis Center, O.....	Best design in maple sugar.....	3 00
Clinton Goodwin, Chardon, O.....	2d best design in maple sugar.....	2 00
O. B. Newcomb, Parkman, O.....	Best five pounds grained sugar.....	3 00
Jas. E. Taggart, Lewis Center, O.....	2d best five pounds grained sugar.....	2 00
Clinton Goodwin, Chardon, O.....	Best display maple wax.....	3 00
O. B. Newcomb, Parkman, O.....	2d best display maple wax.....	2 00
Carl Harper, Chardon, O.....	Best county display maple products.....	15 00
Ohio Maple Syrup Co., Burton, O.....	Best display maple products by dealer....	Medal

## HORTICULTURAL PRODUCTS—S. H. ELLIS, Member in Charge.

Owner's Name and Postoffice.	Name of Article.	Amount.
Summer and Fall Apples.		
W. H. West, Chillicothe, O.....	Best six varieties for family use.....	4 00
O. C. Stockman, Prospect, O.....	2d best six varieties for family use.....	2 00
W. H. West, Chillicothe, O.....	Best three varieties for family use.....	3 00
J. C. Vergon, Delaware, O.....	2d best three varieties for family use.....	1 50
T. S. Johnson, Gypsum, O.....	Best three varieties of large.....	3 00
E. G. Cox, Bradrick, O.....	2d best three varieties of large.....	1 50
W. H. West, Chillicothe, O.....	Best three varieties for market.....	3 00
Nelson Cox, Bradrick, O.....	2d best three varieties for market.....	1 50
E. G. Stockman, Prospect, O.....	Best variety of summer dessert.....	2 00
W. H. West, Chillicothe, O.....	2d best variety of summer dessert.....	1 00
Same.....	Best variety of fall dessert.....	2 00
Hurst & Hurst, Chillicothe, O.....	2d best variety of fall dessert.....	1 00
E. G. Stockman, Prospect, O.....	Best display.....	6 00
H. E. Coombs, Rex, O.....	2d best display.....	3 00
E. V. Rhoads, St. Paris, O.....	Best approved new variety.....	3 00
M. I. Shively, Anderson, O.....	2d best approved new variety.....	1 50
Winter Apples.		
E. G. Cox, Bradrick, O.....	Best twelve varieties for family use.....	8 00
O. C. Stockman, Prospect, O.....	2d best twelve varieties for family use.....	4 00
E. G. Cox, Bradrick, O.....	Best six varieties for family use.....	4 00
M. I. Shively, Anderson, O.....	2d best six varieties for family use.....	2 00
Hurst & Hurst, Chillicothe, O.....	Best six plates large.....	4 00
J. C. Vergon, Delaware, O.....	2d best six plates large.....	2 00
E. G. Cox, Bradrick, O.....	Best variety of dessert.....	2 00
J. C. Vergon, Delaware, O.....	2d best variety of dessert.....	1 00
Nelson Cox, Bradrick, O.....	Best approved new variety.....	2 00
E. G. Cox, Bradrick, O.....	2d best approved new variety.....	1 00
Same.....	Best six varieties for market.....	4 00
Nelson Cox, Bradrick, O.....	2d best six varieties for market.....	2 00
E. G. Stockman, Prospect, O.....	Best display.....	10 00
Nelson Cox, Bradrick, O.....	2d best display.....	5 00
Plate Apples, Summer and Fall.		
E. G. Stockman, Prospect, O.....	Best plate Alexander.....	1 50
O. C. Stockman, Prospect, O.....	2d best plate Alexander.....	75
W. H. West, Chillicothe, O.....	Best plate American Summer Pearmain.....	1 50
Seney West, Chillicothe, O.....	2d best plate American Summer Pearmain.....	75
E. G. Stockman, Prospect, O.....	Best plate Benoni.....	1 50
W. H. West, Chillicothe, O.....	2d best plate Benoni.....	75
W. W. Farnsworth, Waterville, O.....	Best plate Cayuga Red Streak.....	1 50
T. S. Johnson, Gypsum, O.....	2d best plate Cayuga Red Streak.....	75
W. H. West, Chillicothe, O.....	Best plate Chenango Strawberry.....	1 50
E. G. Stockman, Prospect, O.....	2d best plate Chenango Strawberry.....	75
T. S. Johnson, Gypsum, O.....	Best plate Duchess of Oldenburg.....	1 50
E. G. Stockman, Prospect, O.....	2d best plate Duchess of Oldenburg.....	75
R. G. Johnson, Gypsum, O.....	Best plate Fall Pippin.....	1 50
T. S. Johnson, Gypsum, O.....	2d best plate Fall Pippin.....	75
W. H. West, Chillicothe, O.....	Best plate Fall Wine.....	1 50
Seney West, Chillicothe, O.....	2d best plate Fall Wine.....	75
C. E. Leavitt, Mechanicsburg, O.....	Best plate Gravenstein.....	1 50
W. H. West, Chillicothe, O.....	2d best plate Gravenstein.....	75
H. E. Coombs, Rex, O.....	Best plate Jeffries.....	1 50
E. G. Stockman, Prospect, O.....	2d best plate Jeffries.....	75
Chas. Cunningham, Marion, O.....	Best plate Lowell.....	1 50
W. W. Farnsworth, Waterville, O.....	2d best plate Lowell.....	75
H. Bookwalter, Hallsville, O.....	Best plate Maiden's Blush.....	1 50
M. I. Shively, Anderson, O.....	2d best plate Maiden's Blush.....	75
W. W. Farnsworth, Waterville, O.....	Best plate Morris Red.....	1 50
C. W. Counter, North Toledo, O.....	2d best plate Morris Red.....	75
T. S. Johnson, Gypsum, O.....	Best plate Ohio Nonpareil.....	1 50
E. G. Stockman, Prospect, O.....	2d best plate Ohio Nonpareil.....	75
Seney West, Chillicothe, O.....	Best plate Porter.....	1 50
W. H. West, Chillicothe, O.....	2d best plate Porter.....	75
T. S. Johnson, Gypsum, O.....	Best plate Red Astrachan.....	1 50
R. G. Johnson, Gypsum, O.....	2d best plate Red Astrachan.....	75
E. G. Stockman, Prospect, O.....	Best plate Red Beitigheimer.....	1 50
Same.....	Best plate St. Lawrence.....	1 50
O. C. Stockman, Prospect, O.....	2d best plate St. Lawrence.....	75
W. H. West, Chillicothe, O.....	Best plate Summer Queen.....	1 50
C. W. Counter, North Toledo, O.....	2d best plate Summer Queen.....	75
T. S. Johnson, Gypsum, O.....	Best plate Sweet Bough.....	1 50
R. G. Johnson, Gypsum, O.....	2d best plate Sweet Bough.....	75

## HORTICULTURAL PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
<b>Plate Apples, Summer and Fall—Concluded</b>		
W. W. Farnsworth, Waterville, O.....	Best plate Sweet Russet.....	1 50
E. G. Stockman, Prospect, O.....	2d best plate Sweet Russet.....	75
Same.....	Best plate Wealthy.....	1 50
John Smith, Chillicothe, O.....	2d best plate Wealthy.....	75
M. I. Shively Anderson, O.....	Best plate Western Beauty.....	1 50
E. G. Stockman, Prospect, O.....	2d best plate Western Beauty.....	75
W. W. Farnsworth, Waterville, O.....	Best plate Yellow Transparent.....	1 50
C. W. Counter, North Toledo, O.....	2d best plate Yellow Transparent.....	75
<b>Plate Apples, Winter.</b>		
E. G. Stockman, Prospect, O.....	Best plate Bailey's Sweet.....	1 50
J. C. Vergon, Delaware, O.....	2d best plate Bailey's Sweet.....	75
F. A. Brown, Chillicothe, O.....	Best plate Baldwin.....	1 50
H. Bookwalter, Hallsville, O.....	2d best plate Baldwin.....	75
W. W. Farnsworth, Waterville, O.....	Best plate Baltimore.....	1 50
E. G. Stockman, Prospect, O.....	Best plate Belleflower Yellow.....	1 50
M. I. Shively, Anderson, O.....	2d best plate Belleflower Yellow.....	75
T. S. Johnson Gypsum, O.....	Best plate Belmont.....	1 50
E. G. Stockman, Prospect, O.....	2d best plate Belmont.....	75
M. I. Shively, Anderson, O.....	Best plate Ben Davis.....	1 50
F. A. Brown, Chillicothe, O.....	2d best plate Ben Davis.....	75
E. G. Stockman, Prospect, O.....	Best plate Bismark.....	1 50
Same.....	Best plate Black Gilliflower.....	1 50
W. H. West, Chillicothe, O.....	2d best plate Black Gilliflower.....	75
Lee Harris (C. R. Elsea, Agt.), Lithopolis, O.....	Best plate Danver's Winter Sweet.....	1 50
T. S. Johnson, Gypsum, O.....	Best plate Dominic.....	1 50
R. G. Johnson, Gypsum, O.....	2d best plate Dominic.....	75
T. S. Johnson, Gypsum, O.....	Best plate Fallawater.....	1 50
Hurst & Hurst, Chillicothe, O.....	2d best plate Fallawater.....	75
E. G. Stockman, Prospect, O.....	Best plate Fameuse.....	1 50
J. C. Vergon, Delaware, O.....	2d best plate Fameuse.....	75
W. W. Farnsworth, Waterville, O.....	Best plate Greenville.....	1 50
E. G. Stockman, Prospect, O.....	2d best plate Greenville.....	75
Nelson Cox, Bradrick, O.....	Best plate Grimes Golden.....	1 50
M. I. Shively, Anderson, O.....	2d best plate Grimes Golden.....	75
J. L. Roudeshush, Stone Lick, O.....	Best plate Hubbardson.....	1 50
W. W. Farnsworth, Waterville, O.....	2d best plate Hubbardson.....	75
F. A. Brown, Chillicothe, O.....	Best plate Jonathan.....	1 50
Hurst & Hurst, Chillicothe, O.....	2d best plate Jonathan.....	75
T. S. Johnson, Gypsum, O.....	Best plate King (Tompkins Co.).....	1 50
R. G. Johnson, Gypsum, O.....	2d best plate King (Tompkins Co.).....	75
Wm. Long (C. R. Elsea, Agt.), Lithopolis, O.....	Best plate Lady's Sweet.....	1 50
Mary Runkel (C. R. Elsea, Agt.), Lithopolis, O.....	2d best plate Lady's Sweet.....	75
M. I. Shively, Anderson, O.....	Best plate Limber Twig.....	1 50
Hurst & Hurst, Chillicothe, O.....	2d best plate Limber Twig.....	75
J. C. Vergon, Delaware, O.....	Best plate Minkler.....	1 50
H. E. Coombs, Rex, O.....	2d best plate Minkler.....	75
F. A. Brown, Chillicothe, O.....	Best plate Northern Spy.....	1 50
Hurst & Hurst, Chillicothe, O.....	2d best plate Northern Spy.....	75
M. I. Shively, Anderson, O.....	Best plate Northwestern Greening.....	1 50
H. Bookwalter, Hallsville, O.....	Best plate Paradise Winter Sweet.....	1 50
J. C. Bear, Dayton, O.....	2d best plate Paradise Winter Sweet.....	75
H. Bookwalter, Hallsville, O.....	Best plate Peck's Pleasant.....	1 50
Wm. Long (C. R. Elsea, Agt.), Lithopolis, O.....	2d best plate Peck's Pleasant.....	75
M. I. Shively, Anderson, O.....	Best plate Pennock.....	1 50
W. H. West, Chillicothe, O.....	2d best plate Pennock.....	75
R. G. Johnson, Gypsum, O.....	Best plate Pewaukee.....	1 50
T. S. Johnson, Gypsum, O.....	2d best plate Pewaukee.....	75
E. G. Stockman, Prospect, O.....	Best plate Pound Sweet.....	1 50
E. G. Cox, Bradrick, O.....	Best plate Rambo.....	1 50
Nelson Cox, Bradrick, O.....	2d best plate Rambo.....	75
H. Bookwalter, Hallsville, O.....	Best plate Rawles' Jane.....	1 50
C. E. Leavitt, Mechanicsburg, O.....	2d best plate Rawles' Jane.....	75
C. W. Counter, North Toledo, O.....	Best plate Red Canada.....	1 50
W. W. Farnsworth, Waterville, O.....	2d best plate Red Canada.....	75
M. I. Shively, Anderson, O.....	Best plate Rhode Island Greening.....	1 50
W. W. Farnsworth, Waterville, O.....	2d best plate Rhode Island Greening.....	75
Nelson Cox, Bradrick, O.....	Best plate Rome Beauty.....	1 50
E. G. Cox, Bradrick, O.....	2d best plate Rome Beauty.....	75
Same.....	Best plate Roxbury Russet.....	1 50
Nelson Cox, Bradrick, O.....	2d best plate Roxbury Russet.....	75
C. W. Counter, North Toledo, O.....	Best plate Salome.....	1 50
W. W. Farnsworth, Waterville, O.....	2d best plate Salome.....	75
T. S. Johnson, Gypsum, O.....	Best plate Seek-no-farther.....	1 50
R. G. Johnson, Gypsum, O.....	2d best plate Seek-no-farther.....	75
F. A. Brown, Chillicothe, O.....	Best plate Smith's Cider.....	1 50

## HORTICULTURAL PRODUCTS — Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
<b>Plate Apples, Winter — Concluded.</b>		
E. G. Stockman, Prospect, O.....	2d best plate Smith's Cider.....	75
F. A. Brown, Chillicothe, O.....	Best plate Smoke House.....	1 50
Hurst & Hurst, Chillicothe, O.....	2d best plate Smoke House.....	75
Same.....	Best plate Spitzenberg Kaig.....	1 50
F. A. Brown, Chillicothe, O.....	2d best Spitzenberg Kaig.....	75
M. I. Shively, Anderson, O.....	Best plate Stark.....	1 50
J. C. Vergon, Delaware, O.....	2d best plate Stark.....	75
E. G. Stockman, Prospect, O.....	Best plate Sutton Beauty.....	1 50
T. S. Johnson, Gypsum, O.....	Best plate Swaar.....	1 50
Thos. Kislinsbery, Newark, O.....	2d best plate Swaar.....	75
C. W. Counter, North Toledo, O.....	Best plate Sweet Wine Sap.....	1 50
W. W. Farnsworth, Waterville, O.....	2d best plate Sweet Wine Sap.....	75
Same.....	Best plate Talman Sweet.....	1 50
E. G. Stockman, Prospect, O.....	2d best plate Talman Sweet.....	75
E. G. Cox, Bradrick, O.....	Best plate Wagener.....	1 50
H. Bookwalter, Hallsville, O.....	2d best plate Wagener.....	75
John Clamforte (C. R. Elsea, Agt.), Lithopolis, O.....	Best plate Wallridge.....	1 50
John Bishop (C. R. Elsea, Agt.), Lithopolis, O.....	2d best plate Wallridge.....	75
M. I. Shively, Anderson, O.....	Best plate White Pippin.....	1 50
E. G. Stockman, Prospect, O.....	2d best plate White Pippin.....	75
G. N. Toops, Chillicothe, O.....	Best plate Willow Twig.....	1 50
H. Bookwalter, Hallsville, O.....	2d best plate Willow Twig.....	75
E. G. Cox, Bradrick, O.....	Best plate Wine Sap.....	1 50
Nelson Cox, Bradrick, O.....	2d best plate Wine Sap.....	75
H. E. Coombs, Rex, O.....	Best plate York Imperial.....	1 50
E. G. Cox, Bradrick, O.....	2d best plate York Imperial.....	75
<b>Crab Apples.</b>		
E. V. Rhoads, St. Paris, O.....	Best twelve specimens Hughes Virginia.....	1 50
H. Bookwalter, Hallsville, O.....	2d best twelve specimens Hughes Virginia.....	75
G. N. Toops, Chillicothe, O.....	Best twelve specimens Hyslop.....	1 50
C. R. Elsea, Lithopolis, O.....	2d best twelve specimens Hyslop.....	75
E. G. Stockman, Prospect, O.....	Best twelve specimens Transcendent.....	1 50
J. C. Vergon, Delaware, O.....	2d best twelve specimens Transcendent.....	75
W. W. Farnsworth, Waterville, O.....	Best twelve specimens Whitney's No. 20.....	1 50
E. G. Stockman, Prospect, O.....	2d best twelve specimens Whitney's No. 20.....	75
Same.....	Best display.....	3 00
Cobb Gavitt, Ashley, O.....	2d best display.....	2 00
<b>Peaches.</b>		
C. W. Counter, North Toledo, O.....	Best six varieties, green or white.....	3 00
T. S. Johnson, Gypsum, O.....	2d best six varieties, green or white.....	2 00
C. W. Counter, North Toledo, O.....	Best six varieties, yellow.....	3 00
T. S. Johnson, Gypsum, O.....	2d best six varieties, yellow.....	2 00
Same.....	Best display.....	6 00
C. W. Counter, North Toledo, O.....	2d best display.....	4 00
T. S. Johnson, Gypsum, O.....	Best new variety.....	2 00
Same.....	Best plate Beer's Smock.....	2 00
R. G. Johnson, Gypsum, O.....	2d best plate Beer's Smock.....	1 00
Same.....	Best plate Clair's Choice.....	2 00
T. S. Johnson, Gypsum, O.....	2d best plate Clair's Choice.....	1 00
R. G. Johnson, Gypsum, O.....	Best plate Champion.....	2 00
C. W. Counter, North Toledo, O.....	2d best plate Champion.....	1 00
T. S. Johnson, Gypsum, O.....	Best plate Crawford's Early.....	2 00
R. G. Johnson, Gypsum, O.....	2d best plate Crawford's Early.....	1 00
Same.....	Best plate Crawford's Late.....	2 00
T. S. Johnson, Gypsum, O.....	2d best plate Crawford's Late.....	1 00
W. W. Farnsworth, Waterville, O.....	Best plate Crosby.....	2 00
C. W. Counter, North Toledo, O.....	2d best plate Crosby.....	1 00
W. W. Farnsworth, Waterville, O.....	Best plate Diamond.....	2 00
C. W. Counter, North Toledo, O.....	2d best plate Diamond.....	1 00
W. W. Farnsworth, Waterville, O.....	Best plate Early Rivers.....	2 00
R. G. Johnson, Gypsum, O.....	2d best plate Early Rivers.....	1 00
C. W. Counter, North Toledo, O.....	Best plate Early Toledo.....	2 00
W. W. Farnsworth, Waterville, O.....	2d best plate Early Toledo.....	1 00
C. W. Counter, North Toledo, O.....	Best plate Early York.....	2 00
R. G. Johnson, Gypsum, O.....	2d best plate Early York.....	1 00
Same.....	Best plate Elberta.....	2 00
T. S. Johnson, Gypsum, O.....	2d best plate Elberta.....	1 00
Same.....	Best plate Emma.....	2 00
C. W. Counter, North Toledo, O.....	2d best plate Emma.....	1 00
T. S. Johnson, Gypsum, O.....	Best plate Foster.....	2 00

## HORTICULTURAL PRODUCTS — Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
<b>Peaches — Concluded.</b>		
R. G. Johnson, Gypsum, O.....	2d best plate Foster.....	1 00
Same	Best plate Hill's Chili.....	2 00
T. S. Johnson, Gypsum, O.....	2d best plate Hill's Chili.....	1 00
Same	Best plate Jacque's Rareripec.....	2 00
R. G. Johnson, Gypsum, O.....	2d best plate Jacque's Rareripec.....	1 00
W. W. Farnsworth, Waterville, O.....	Best plate Kalamazoo.....	2 00
C. W. Counter, North Toledo, O.....	2d best plate Kalamazoo.....	1 00
T. S. Johnson, Gypsum, O.....	Best plate Lemon Cling.....	2 00
R. G. Johnson, Gypsum, O.....	2d best plate Lemon Cling.....	1 00
T. S. Johnson, Gypsum, O.....	Best plate Lewis' Seedling.....	2 00
R. G. Johnson, Gypsum, O.....	2d best plate Lewis' Seedling.....	1 00
C. W. Counter, North Toledo, O.....	Best plate Marshall's Late.....	2 00
R. G. Johnson, Gypsum, O.....	2d best plate Marshall's Late.....	1 00
C. W. Counter, North Toledo, O.....	Best plate Morris' White.....	2 00
R. G. Johnson, Gypsum, O.....	2d best plate Morris' White.....	1 00
Same	Best plate Mountain Rose.....	2 00
T. S. Johnson, Gypsum, O.....	2d best plate Mountain Rose.....	1 00
Same	Best plate Old Mixon Cling.....	2 00
R. G. Johnson, Gypsum, O.....	2d best plate Old Mixon Cling.....	1 00
Same	Best plate Old Mixon Free.....	2 00
T. S. Johnson, Gypsum, O.....	2d best plate Old Mixon Free.....	1 00
C. W. Counter, North Toledo, O.....	Best plate President.....	2 00
W. W. Farnsworth, Waterville, O.....	2d best plate President.....	1 00
R. G. Johnson, Gypsum, O.....	Best plate Red Cheeked Melocoton.....	2 00
T. S. Johnson, Gypsum, O.....	2d best plate Red Cheeked Melocoton.....	1 00
Same	Best plate Salway.....	2 00
R. G. Johnson, Gypsum, O.....	2d best plate Salway.....	1 00
C. W. Counter, North Toledo, O.....	Best plate Smock Free.....	2 00
T. S. Johnson, Gypsum, O.....	2d best plate Smock Free.....	1 00
Same	Best plate Stephen's Rareripec.....	2 00
R. G. Johnson, Gypsum, O.....	2d best plate Stephen's Rareripec.....	1 00
Same	Best plate Stump-the-World.....	2 00
T. S. Johnson, Gypsum, O.....	2d best plate Stump-the-World.....	1 00
W. W. Farnsworth, Waterville, O.....	Best plate Triumph.....	2 00
C. W. Counter, North Toledo, O.....	2d best plate Triumph.....	1 00
T. S. Johnson, Gypsum, O.....	Best plate Wheatland.....	2 00
R. G. Johnson, Gypsum, O.....	2d best plate Wheatland.....	1 00
<b>Quinces.</b>		
G. N. Toops, Chillicothe, O.....	Best plate Champion.....	2 00
E. V. Rhoads, St. Paris, O.....	2d best plate Champion.....	1 00
G. N. Toops, Chillicothe, O.....	Best plate Meech.....	2 00
E. V. Rhoads, St. Paris, O.....	2d best plate Meech.....	1 00
E. G. Cox, Bradrick, O.....	Best plate Rea's Mammoth.....	2 00
H. Bookwalter, Hallsville, O.....	2d best plate Rea's Mammoth.....	1 00
Same	Best plate Orange.....	2 00
Lewis Leindecker (C. R. Elsea, Agt.), Lithopolis, O.....	2d best plate Orange.....	1 00
H. Bookwalter, Hallsville, O.....	Best peck quinces.....	3 00
C. R. Elsea, Lithopolis, O.....	2d best peck quinces.....	1 50
<b>Plums.</b>		
C. W. Counter, North Toledo, O.....	Best plate Abundance.....	2 00
W. W. Farnsworth, Waterville, O.....	2d best plate Abundance.....	1 00
R. G. Johnson, Gypsum, O.....	Best plate Bradshaw.....	2 00
T. S. Johnson, Gypsum, O.....	2d best plate Bradshaw.....	1 00
W. W. Farnsworth, Waterville, O.....	Best plate Burbank.....	2 00
C. W. Counter, North Toledo, O.....	2d best plate Burbank.....	1 00
R. G. Johnson, Gypsum, O.....	Best plate Coe's Golden Drop.....	2 00
T. S. Johnson, Gypsum, O.....	2d best plate Coe's Golden Drop.....	1 00
Same	Best plate Duane's Purple.....	2 00
W. W. Farnsworth, Waterville, O.....	Best plate Fellemborg.....	2 00
E. G. Cox, Bradrick, O.....	2d best plate Fellemborg.....	1 00
W. W. Farnsworth, Waterville, O.....	Best plate French Damson.....	2 00
C. W. Counter, North Toledo, O.....	2d best plate French Damson.....	1 00
Same	Best plate Genie.....	2 00
W. W. Farnsworth, Waterville, O.....	2d best plate Genie.....	1 00
Same	Best Plate German Prune.....	2 00
T. S. Johnson, Gypsum, O.....	2d best plate German Prune.....	1 00
E. G. Cox, Bradrick, O.....	Best plate Imperial Gage.....	2 00
Nelson Cox, Bradrick, O.....	2d best plate Imperial Gage.....	1 00
E. G. Cox, Bradrick, O.....	Best plate Lombard.....	2 00
T. S. Johnson, Gypsum, O.....	2d best plate Lombard.....	1 00
W. W. Farnsworth, Waterville, O.....	Best plate Monarch.....	2 00
C. W. Counter, North Toledo, O.....	2d best plate Monarch.....	1 00



## HORTICULTURAL PRODUCTS — Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Plums — Concluded.		
W. W. Farnsworth, Waterville, O.....	Best plate Moore's Arctic.....	2 00
C. W. Counter, North Toledo, O.....	2d best plate Moore's Arctic.....	1 00
T. S. Johnson, Gypsum, O.....	Best plate Murdy.....	2 00
R. G. Johnson, Gypsum, O.....	2d best plate Murdy.....	1 00
T. S. Johnson, Gypsum, O.....	Best plate Niagara.....	2 00
K. G. Johnson, Gypsum, O.....	2d best plate Niagara.....	1 00
Same.....	Best plate Pond's Seedling.....	1 00
T. S. Johnson, Gypsum, O.....	2d best plate Pond's Seedling.....	1 00
R. G. Johnson, Gypsum, O.....	Best plate Reine Claude.....	2 00
W. W. Farnsworth, Waterville, O.....	2d best plate Reine Claude.....	1 00
J. C. Bear, Dayton, O.....	Best plate Richland.....	2 00
C. W. Counter, North Toledo, O.....	Best plate Shipper's Pride.....	2 00
W. W. Farnsworth, Waterville, O.....	2d best plate Shipper's Pride.....	1 00
W. H. West, Chillicothe, O.....	Best plate Shropshire.....	2 00
T. S. Johnson, Gypsum, O.....	2d best plate Shropshire.....	1 00
W. W. Farnsworth, Waterville, O.....	Best display ten varieties.....	5 00
T. S. Johnson, Gypsum, O.....	2d best display ten varieties.....	2 50
Same.....	Best display five varieties.....	3 00
W. W. Farnsworth, Waterville, O.....	2d best display five varieties.....	1 50
Pears.		
C. W. Counter, North Toledo, O.....	Best six varieties, summer and fall.....	4 00
W. W. Farnsworth, Waterville, O.....	2d best six varieties, summer and fall.....	2 00
Same.....	Best ten varieties, summer, fall and winter.....	5 00
C. W. Counter, North Toledo, O.....	2d best ten varieties, summer, fall & winter.....	2 50
Same.....	Best three varieties, large.....	3 00
W. W. Farnsworth, Waterville, O.....	2d best three varieties, large.....	1 50
C. W. Counter, North Toledo, O.....	Best new variety.....	2 00
E. V. Rhoads, St. Paris, O.....	2d best new variety.....	1 00
H. Bookwalter, Hallsville, O.....	Best variety, dessert.....	2 00
Nelson Cox, Bradrick, O.....	2d best variety, dessert.....	1 00
C. W. Counter, North Toledo, O.....	Best display.....	10 00
W. W. Farnsworth, Waterville, O.....	2d best display.....	5 00
C. W. Counter, North Toledo, O.....	Best plate Anjou.....	2 00
W. W. Farnsworth, Waterville, O.....	2d best plate Anjou.....	1 00
R. G. Johnson, Gypsum, O.....	Best plate Bartlett.....	2 00
T. S. Johnson, Gypsum, O.....	2d best plate Bartlett.....	1 00
W. W. Farnsworth, Waterville, O.....	Best plate Beurre Bosc.....	2 00
C. W. Counter, North Toledo, O.....	2d best plate Beurre Bosc.....	1 00
Same.....	Best plate Beurre Clairgeau.....	2 00
W. W. Farnsworth, Waterville, O.....	2d best plate Beurre Clairgeau.....	1 00
C. W. Counter, North Toledo, O.....	Best plate Clapp's Favorite.....	2 00
W. W. Farnsworth, Waterville, O.....	2d best plate Clapp's Favorite.....	1 00
C. W. Counter, North Toledo, O.....	Best plate Columbia.....	2 00
W. W. Farnsworth, Waterville, O.....	2d best plate Columbia.....	1 00
W. W. Farnsworth, Waterville, O.....	Best plate Doyenne Bousoc.....	2 00
C. W. Counter, North Toledo, O.....	2d best plate Doyenne Bousoc.....	1 00
Same.....	Best plate Duchess.....	2 00
W. W. Farnsworth, Waterville, O.....	2d best plate Duchess.....	1 00
T. S. Johnson, Gypsum, O.....	Best plate Flemish Beauty.....	2 00
C. W. Counter, North Toledo, O.....	2d best plate Flemish Beauty.....	1 00
Same.....	Best plate Frederick Clapp.....	2 00
W. W. Farnsworth, Waterville, O.....	2d best plate Frederick Clapp.....	1 00
C. W. Counter, North Toledo, O.....	Best plate Howell.....	2 00
W. W. Farnsworth, Waterville, O.....	2d best plate Howell.....	1 00
E. G. Cox, Bradrick, O.....	Best plate Idaho.....	2 00
C. W. Counter, North Toledo, O.....	2d best plate Idaho.....	1 00
C. R. Elsea, Lkhopolis, O.....	Best plate Keiffer.....	2 00
W. W. Farnsworth, Waterville, O.....	2d best plate Keiffer.....	1 00
C. W. Counter, North Toledo, O.....	Best plate Lawrence.....	2 00
W. W. Farnsworth, Waterville, O.....	2d best plate Lawrence.....	1 00
T. S. Johnson, Gypsum, O.....	Best plate Louise Bonne.....	2 00
C. W. Counter, North Toledo, O.....	2d best plate Louise Bonne.....	1 00
Same.....	Best plate Onondaga.....	2 00
W. W. Farnsworth, Waterville, O.....	2d best plate Onondaga.....	1 00
Same.....	Best plate President.....	2 00
C. W. Counter, North Toledo, O.....	2d best plate President.....	1 00
H. Bookwalter, Hallsville, O.....	Best plate Seckel.....	2 00
C. W. Counter, North Toledo, O.....	2d best plate Seckel.....	1 00
Thos. Kislberg, Newark, O.....	Best plate Sheldon.....	2 00
T. S. Johnson, Gypsum, O.....	2d best plate Sheldon.....	1 00
C. W. Counter, North Toledo, O.....	Best plate Vicar.....	2 00
W. W. Farnsworth, Waterville, O.....	2d best plate Vicar.....	1 00
E. V. Rhoads, St. Paris, O.....	Best plate Winter Nelis.....	2 00
C. W. Counter, North Toledo, O.....	2d best plate Winter Nelis.....	1 00

## HORTICULTURAL PRODUCTS — Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
<b>Grapes.</b>		
E. M. Woodard, Kirtland, O.	Best twenty varieties.	10 00
C. W. Counter, North Toledo, O.	2d best twenty varieties.	6 00
E. M. Woodard, Kirtland, O.	Best ten varieties.	6 00
W. H. West, Chillicothe, O.	2d best ten varieties.	8 00
E. M. Woodard, Kirtland, O.	Best six varieties.	4 00
W. H. West, Chillicothe, O.	2d best six varieties.	2 00
E. M. Woodard, Kirtland, O.	Best three varieties.	3 00
W. H. West, Chillicothe, O.	2d best three varieties.	1 50
Same	Best three plates early table.	3 00
E. M. Woodard, Kirtland, O.	2d best three plates early table.	1 50
Same	Best three plates late table.	3 00
Same	Best plate Agawam.	2 00
W. H. West, Chillicothe, O.	2d best plate Agawam.	1 00
E. M. Woodard, Kirtland, O.	Best plate Alice.	2 00
Same	Best plate Aminia.	2 00
Same	Best plate Brighton.	2 00
C. W. Counter, North Toledo, O.	2d best plate Brighton.	1 00
E. M. Woodard, Kirtland, O.	Best plate Brilliant.	2 00
Same	Best plate Campbell's Early.	2 00
Same	Best plate Catawba.	2 00
W. H. West, Chillicothe, O.	2d best plate Catawba.	1 00
E. M. Woodard, Kirtland, O.	Best plate Concord.	2 00
W. H. West, Chillicothe, O.	2d best plate Concord.	1 00
E. M. Woodard, Kirtland, O.	Best plate Delaware.	2 00
T. S. Johnson, Gypsum, O.	2d best plate Delaware.	1 00
E. M. Woodard, Kirtland, O.	Best plate Duchess.	2 00
C. W. Counter, North Toledo, O.	2d best plate Duchess.	1 00
E. M. Woodard, Kirtland, O.	Best plate Eaton.	2 00
Same	Best plate Empire State.	2 00
Same	Best plate Gaertner.	2 00
Same	Best plate Geneva.	2 00
Same	Best plate Green Mountain.	2 00
Same	Best plate Herbert.	2 00
Same	Best plate Ives.	2 00
J. P. Strecker, Columbus, O.	2d best plate Ives.	1 00
E. M. Woodard, Kirtland, O.	Best plate Jefferson.	2 00
T. S. Johnson, Gypsum, O.	2d best plate Jefferson.	1 00
E. M. Woodard, Kirtland, O.	Best plate Lady Washington.	2 00
Same	Best plate Lindley.	2 00
Same	Best plate Massasoit.	2 00
C. W. Counter, North Toledo, O.	Best plate Montefiore.	2 00
E. M. Woodard, Kirtland, O.	2d best plate Montefiore.	1 00
Same	Best plate Moore's Diamond.	2 00
Same	Best plate Moore's Early.	2 00
C. W. Counter, North Toledo, O.	2d best plate Moore's Early.	1 00
Same	Best plate Mo. Reisling.	2 00
E. M. Woodard, Kirtland, O.	2d best plate Mo. Reisling.	1 00
Same	Best plate Nectar.	2 00
Same	Best plate Niagara.	2 00
W. H. West, Chillicothe, O.	2d best plate Niagara.	1 00
C. W. Counter, North Toledo, O.	Best plate Norton's Virginia.	2 00
E. M. Woodard, Kirtland, O.	2d best plate Norton's Virginia.	1 00
Same	Best plate Pocklington.	2 00
J. C. Bear, Dayton, O.	2d best plate Pocklington.	1 00
E. M. Woodard, Kirtland, O.	Best plate R. B. Hayes.	2 00
Same	Best plate Salem.	2 00
Same	Best plate Ulster.	2 00
W. H. West, Chillicothe, O.	Best plate Wilder.	2 00
E. M. Woodard, Kirtland, O.	2d best plate Wilder.	1 00
W. H. West, Chillicothe, O.	Best plate Woodruff's Red.	2 00
E. M. Woodard, Kirtland, O.	2d best plate Woodruff's Red.	1 00
W. H. West, Chillicothe, O.	Best plate Worden.	2 00
E. M. Woodard, Kirtland, O.	2d best plate Worden.	1 00
<b>County Fruits.</b>		
T. S. Johnson, Gypsum, O.	Best 100 plates of fruit.	75 00
W. W. Farnsworth, Waterville, O.	2d best 100 plates of fruit.	50 00
C. W. Counter, North Toledo, O.	3d best 100 plates of fruit.	50 00
E. G. Stockman, Prospect, O.	4th best 100 plates of fruit.	40 00
W. H. West, Chillicothe, O.	5th best 100 plates of fruit.	30 00
L. M. Gregg, Dayton, O.	6th best 100 plates of fruit.	20 00

## PLANTS AND FLOWERS—S. H. ELLIS, Member in Charge.

Owner's Name and Postoffice.	Name of Article.	Amount.
<b>Plants — Professional List.</b>		
E. L. Charles, Columbus, O.....	Best collection of plants.....	\$25 00
G. F. Brehmer, Chillicothe, O.....	2d best collection of plants.....	15 00
E. L. Charles, Columbus, O.....	Best collection of palms.....	15 00
G. F. Brehmer, Chillicothe, O.....	2d best collection of palms.....	10 00
E. L. Charles, Columbus, O.....	Best collection of ferns and lycopodiums.....	10 00
G. F. Brehmer, Chillicothe, O.....	2d best collection of ferns and lycopodiums.....	5 00
E. L. Charles, Columbus, O.....	Best collection of rex and begonias.....	10 00
G. F. Brehmer, Chillicothe, O.....	2d best collection of rex and begonias.....	5 00
T. C. Breece, West Berlin, O.....	Best collection of cannas.....	10 00
E. L. Charles, Columbus, O.....	2d best collection of cannas.....	5 00
G. F. Brehmer, Chillicothe, O.....	Best collection of crotons.....	10 00
E. L. Charles, Columbus, O.....	2d best collection of crotons.....	5 00
T. C. Breece, West Berlin, O.....	Best collection of geraniums.....	8 00
E. L. Charles, Columbus, O.....	2d best collection of geraniums.....	4 00
Same.....	Best collection of asters.....	8 00
T. C. Breece, West Berlin, O.....	2d best collection of asters.....	4 00
E. L. Charles, Columbus, O.....	Best pair vases filled with plants.....	8 00
Same.....	Best six baskets filled with plants.....	8 00
G. F. Brehmer, Chillicothe, O.....	Best collection of variegated plants.....	10 00
E. L. Charles, Columbus, O.....	2d best collection of variegated plants.....	5 00
<b>Cut Flowers — Florists' List.</b>		
C. A. Roth, Columbus, O.....	Best pair hand bouquets.....	8 00
E. L. Charles, Columbus, O.....	2d best pair hand bouquets.....	4 00
C. A. Roth, Columbus, O.....	Best handle basket.....	8 00
E. L. Charles, Columbus, O.....	2d best handle basket.....	4 00
C. A. Roth, Columbus, O.....	Best display of floral designs.....	25 00
E. L. Charles, Columbus, O.....	2d best display of floral designs.....	15 00
C. A. Roth, Columbus, O.....	Best single floral design.....	10 00
E. L. Charles, Columbus, O.....	2d best single floral design.....	5 00
C. A. Roth, Columbus, O.....	Best display of cut roses.....	10 00
E. L. Charles, Columbus, O.....	2d best display of cut roses.....	5 00
C. A. Roth, Columbus, O.....	Best display of cut dahlias.....	6 00
Cushman Gladiolus Co., Euclid, O.....	2d best display of cut dahlias.....	3 00
Same.....	Best display of cut gladioli.....	10 00
G. F. Brehmer, Chillicothe, O.....	2d best display of cut gladioli.....	5 00
E. L. Charles, Columbus, O.....	Best display of cut carnations.....	6 00
G. F. Brehmer, Chillicothe, O.....	2d best display of cut carnations.....	3 00
C. A. Roth, Columbus, O.....	Best display of cut asters.....	6 00
E. L. Charles, Columbus, O.....	2d best display of cut asters.....	3 00
Same.....	Best collection of cut flowers.....	12 00
C. A. Roth, Columbus, O.....	2d best collection of cut flowers.....	8 00
<b>Plants and Flowers — Amateur List.</b>		
Susie E. Perry, Columbus, O.....	Best collection of plants.....	15 00
Minnie Bieber, Delaware, O.....	2d best collection of plants.....	8 00
Same.....	Best collection of variegated plants.....	8 00
Susie E. Perry, Columbus, O.....	2d best collection of variegated plants.....	4 00
Same.....	Best collection of begonias.....	8 00
Minnie Bieber, Delaware, O.....	2d best collection of begonias.....	4 00
Susie E. Perry, Columbus, O.....	Best collection of cannas.....	5 00
Mrs. Ella Zimmer, Zimmer, O.....	Best collection of aloes and cacti.....	5 00
Miss Flora Zimmer, Zimmer, O.....	2d best collection of aloes and cacti.....	3 00
Mrs. W. R. Sprague, Brice, O.....	Best collection of geraniums.....	5 00
Susie E. Perry, Columbus, O.....	2d best collection of geraniums.....	3 00
Same.....	Best collection of ferns and lycopodiums.....	5 00
Minnie Bieber, Delaware, O.....	2d best collection of ferns and lycopodiums.....	3 00
Mrs. Ella Zimmer, Zimmer, O.....	Best collection of plants on trellises.....	3 00
Minnie Bieber, Delaware, O.....	2d best collection of plants on trellises.....	2 00
Mrs. W. R. Sprague, Brice, O.....	Best six hanging baskets of plants.....	5 00
Minnie Bieber, Delaware, O.....	Best single rustic basket.....	8 00
James E. Taggart, Lewis Center, O.....	2d best single rustic basket.....	1 00
<b>Cut Flowers and Floral Designs.</b>		
Mrs. S. B. Franklin, Chillicothe, O.....	Best collection of dahlias.....	8 00
Same.....	Best collection of roses.....	3 00
Clara Bieber, Delaware, O.....	Best collection of verbenas.....	3 00
Mrs. E. G. Taggart, Lewis Center, O.....	2d best collection of verbenas.....	2 00
Mrs. S. B. Franklin, Chillicothe, O.....	Best display of asters.....	3 00
Clara Bieber, Delaware, O.....	2d best display of asters.....	2 00
Same.....	Best display of geraniums.....	2 00
Susie E. Perry, Columbus, O.....	2d best display of geraniums.....	1 00

## PLANTS AND FLOWERS — Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
<b>Cut Flowers and Floral Designs — Concluded.</b>		
Mrs. S. B. Franklin, Chillicothe, O.....	Best display of carnations.....	3 00
Mrs. E. G. Taggart, Lewis Center, O.....	2d best display of carnations.....	2 00
E. M. Woodard, Kirtland, O.....	Best display of gladioli.....	2 00
Mrs. E. G. Taggart, Lewis Center, O.....	2d best display of gladioli.....	1 00
Clara Bieber, Delaware, O.....	Best display of coxcombs and amaranths..	2 00
Mrs. W. R. Sprague, Brice, O.....	2d best display of coxcombs & amaranths	1 00
Mrs. S. B. Franklin, Chillicothe, O.....	Best display of double zinnias.....	2 00
Susie E. Perry, Columbus, O.....	Best display of cut flowers.....	5 00
Mrs. Ella Zimmer, Zimmer, O.....	2d best display of cut flowers.....	3 00
Susie E. Perry, Columbus, O.....	Best pair of bouquets.....	3 00
Lucy W. Taggart, Lewis Center, O.....	2d best pair of bouquets.....	2 00
Mrs. E. G. Taggart, Lewis Center, O.....	Best vase of cut flowers.....	3 00
Susie E. Perry, Columbus, O.....	2d best vase of cut flowers.....	2 00
Mrs. E. G. Taggart, Lewis Center, O.....	Best single floral design.....	5 00
Susie E. Perry, Columbus, O.....	2d best single floral design.....	3 00
Lucy W. Taggart, Lewis Center, O.....	Best collection of native flowers.....	3 00
Mrs. E. G. Taggart, Lewis Center, O.....	2d best collection of native flowers.....	2 00

## WOMAN'S WORK—SAMUEL TAYLOR, Member in Charge.

Owner's Name and Postoffice.	Name of Article.	Amount.
<b>Household Fabrics.</b>		
Ellen V. Nightingale, Circleville, O.	Best silk quilt (crazy)	\$3 00
Miss Elizabeth Leigh, Groveport, O.	2d best silk quilt (crazy)	1 00
Mrs. Anna Glick, Columbus, O.	Best silk quilt (not crazy)	3 00
Maude C. Hinsey, Pekin, Ill.	2d best silk quilt (not crazy)	1 00
Carrie Kiefer, Columbus, O.	Best velvet quilt (large)	3 00
Ellen V. Nightingale, Circleville, O.	2d best velvet quilt (large)	1 00
Maude C. Hinsey, Pekin, Ill.	Best worsted quilt	2 00
Mrs. P. Grooms, Brecon, O.	2d best worsted quilt	1 00
Maude C. Hinsey, Pekin, Ill.	Best log cabin quilt	2 00
Mrs. P. Grooms, Brecon, O.	2d best log cabin quilt	1 00
Same	Best white quilt	2 00
Same	Best patchwork quilt	2 00
Mrs. Chas. Sebastin, Columbus, O.	2d best patchwork quilt	1 00
Mrs. H. Desmond, Marion, O.	Best cradle quilt	1 00
Maude C. Hinsey, Pekin, Ill.	2d best cradle quilt	50
Miss Anna Miller, Indianapolis, Ind.	Best silk comfort	3 00
Ellen V. Nightingale, Circleville, O.	2d best silk comfort	1 00
Mrs. T. C. Booth, Marion, O.	Best cotton comfort	2 00
Mrs. O. H. Duntun, Circleville, O.	2d best cotton comfort	1 00
Miss Anna Miller, Indianapolis, Ind.	Best worsted comfort	2 00
Mrs. Effie Cunningham, Newark, O.	2d best worsted comfort	1 00
Mrs. G. W. Yoerger, Columbus, O.	Best hearth rug (rag)	1 00
Mrs. H. G. Young, Clintonville, O.	2d best hearth rug (rag)	50
Miss Anna Miller, Indianapolis, Ind.	Best hearth rug (yarn)	1 00
Mrs. P. Grooms, Brecon, O.	2d best hearth rug (yarn)	50
Miss Anna Miller, Indianapolis, Ind.	Best hearth rug (silk)	1 00
Mrs. Sarah Semmis, Westerville, O.	Best rag carpet, ten yards	3 00
Mrs. W. H. Snedeker, Delaware, O.	2d best rag carpet, ten yards	2 00
Maude C. Hinsey, Pekin, Ill.	Best specimen of darning	1 00
Miss Lissa P. Wannan, Norwood, O.	2d best specimen of darning	50
<b>Knitting.</b>		
Mrs. P. Grooms, Brecon, O.	Best pair woolen stockings	1 00
Maude C. Hinsey, Pekin, Ill.	2d best pair woolen stockings	50
Same	Best pair woolen socks	1 00
Mrs. P. Grooms, Brecon, O.	2d best pair woolen socks	50
Miss Lissa P. Wannan, Norwood, O.	Best pair woolen baby socks	1 00
Mrs. C. J. McClure, Xenia, O.	2d best pair woolen baby socks	50
Mrs. Jane McClarty, Chillicothe, O.	Best pair linen stockings	1 00
Miss Anna Miller, Indianapolis, Ind.	2d best pair linen stockings	50
Mrs. Henry Bieber, Delaware, O.	Best pair cotton stockings	1 00
Mrs. Jane McClarty, Chillicothe, O.	2d best pair cotton stockings	50
Maude C. Hinsey, Pekin, Ill.	Best bed spread	2 00
Mrs. Wm. Franz, Bucyrus, O.	2d best bed spread	1 00
Miss Anna Miller, Indianapolis, Ind.	Best pair woolen mittens	1 00
Mrs. P. A. Beardsley, West Andover, O.	2d best pair woolen mittens	50
Mrs. E. Buck, Lockland, O.	Best pair silk stockings	1 00
Maude C. Hinsey, Pekin, Ill.	2d best pair silk stockings	50
Maude C. Hinsey, Pekin, Ill.	Best pair silk socks	1 00
Miss Anna Miller, Indianapolis, Ind.	2d best pair silk socks	50
Maude C. Hinsey, Pekin, Ill.	Best pair silk mittens	1 00
Mrs. Clara L. Sproul, Troy, O.	2d best pair silk mittens	50
Mrs. Jane McClarty, Chillicothe, O.	Best woolen corset cover	1 00
Mrs. W. E. B. Smith, Denver, Col.	Best pair lady's slippers	1 00
Mrs. Jane McClarty, Chillicothe, O.	2d best pair lady's slippers	50
Maude C. Hinsey, Pekin, Ill.	Best pair cotton socks	1 00
Mrs. P. Grooms, Brecon, O.	2d best pair cotton socks	50
Mrs. W. E. B. Smith, Denver, Col.	Best cotton lace	1 00
Miss Mattie Hall, Lexington, Ky.	2d best cotton lace	50
Same	Best woolen lace	1 00
Mrs. C. J. McClure, Xenia, O.	2d best woolen lace	50
Mrs. Hattie Bohlander, Marion, O.	Best infant's sacque	1 00
Mrs. W. E. B. Smith, Denver, Col.	2d best infant's sacque	50
Mrs. T. C. Booth, Marion, O.	Best infant's hood	1 00
Mrs. W. E. B. Smith, Denver, Col.	2d best infant's hood	50
Miss Anna Miller, Indianapolis, Ind.	Best lady's knit skirt	1 00
Maude C. Hensey, Pekin, Ill.	2d best lady's knit skirt	50
<b>Needle Work—Hand Made.</b>		
Mrs. Wm. Franz, Bucyrus, O.	Best fancy shirt	2 00
Mrs. C. J. McClure, Xenia, O.	2d best fancy shirt	1 00
Maude C. Hensey, Pekin, Ill.	Best pair fancy pillow shams	2 00
Mrs. P. A. Beardsley, West Andover, O.	2d best pair fancy pillow shams	1 00

## WOMAN'S WORK — Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
<b>Needle Work — Hand Made — Concluded.</b>		
Miss Anna Miller, Indianapolis, Ind.....	Best chemise .....	2 00
Maude C. Hensey, Pekin, Ill.....	2d best chemise.....	1 00
Same .....	Best nightdress .....	2 00
Miss Anna Miller, Indianapolis, Ind.....	2d best nightdress.....	1 00
Mrs. P. A. Beardale, West Andover, O.....	Best pair fancy pillow cases.....	1 00
Mrs. Wm. Franz, Bucyrus, O.....	2d best pair fancy pillow cases.....	50
Maude C. Hinsey, Pekin, Ill.....	Best fancy apron.....	1 00
Miss Anna Miller, Indianapolis, Ind.....	2d best fancy apron.....	50
Same .....	Best infant's robe.....	2 00
Mrs. C. J. McClure, Xenia, O.....	2d best infant's robe.....	1 00
Mrs. Wm. Franz, Bucyrus, O.....	Best bed spread.....	2 00
Mrs. Anna Glick, Columbus, O.....	2d best bed spread.....	1 00
Mrs. T. C. Booth, Marion, O.....	Best gent's shirt.....	2 00
Mrs. L. K. Roney, Troy, O.....	2d best gent's shirt.....	1 00
Maude C. Hinsey, Pekin, Ill.....	Best sofa pillow.....	1 00
Mrs. P. A. Beardale, West Andover, O.....	2d best sofa pillow.....	50
<b>Machine Sewing — Amateur.</b>		
Miss Lewis, Urbana, O.....	Best suit lady's underwear.....	2 00
Kate Bloomer, Xenia, O.....	2d best suit lady's underwear.....	1 00
Same .....	Best infant's suit.....	2 00
Mrs. C. J. McClure, Xenia, O.....	2d best infant's suit.....	1 00
Miss Lissa P. Wannan, Norwood, O.....	Best gent's shirt.....	2 00
Mrs. C. J. McClure, Xenia, O.....	2d best gent's shirt.....	1 00
Miss M. Johnson, Dayton, O.....	Best fancy apron.....	1 00
Miss Lissa P. Wannan, Norwood, O.....	2d best fancy apron.....	50
Mrs. E. Buck, Lockland, O.....	Best sunbonnet.....	1 00
Miss M. Johnson, Dayton, O.....	2d best sunbonnet.....	50
Same .....	Best dress for lady.....	2 00
Mrs. C. J. McClure, Xenia, O.....	2d best dress for lady.....	1 00
Mrs. Gamble Shields, Marysville, O.....	Best night robe.....	2 00
Maude C. Hinsey, Pekin, Ill.....	2d best night robe.....	1 00
Mrs. W. E. B. Smith, Denver, Col.....	Best skirt.....	2 00
Miss Lissa P. Wannan, Norwood, O.....	2d best skirt.....	1 00
Same .....	Best corset cover.....	1 00
Maude C. Hinsey, Pekin, Ill.....	2d best corset cover.....	50
Mrs. C. J. McClure, Xenia, O.....	Best display.....	8 00
Miss Anna Miller, Indianapolis, Ind.....	2d best display.....	2 00
<b>Delft Embroidery.</b>		
Miss Mattie Hall, Lexington, Ky.....	Best lunch cloth.....	2 00
Julia Gill, Columbus, O.....	Best six doilies.....	2 00
Mrs. L. G. Trimble, Marion, O.....	2d best six doilies.....	1 00
Mrs. Hattie Bohlander, Marion, O.....	Best center piece.....	2 00
Mrs. L. K. Roney, Troy, O.....	2d best center piece.....	1 00
Miss Mattie Hall, Lexington, Ky.....	Best tray cloth.....	1 00
Mrs. L. G. Trimble, Marion, O.....	2d best tray cloth.....	50
Julia Gill, Columbus, O.....	Best pin cushion.....	1 00
Miss Lissa P. Wannan, Norwood, O.....	2d best pin cushion.....	50
Miss Mattie Hall, Lexington, Ky.....	Best specimen .....	1 00
Julia Gill, Columbus, O.....	Best display .....	1 00
<b>Old Ladies' Class.</b>		
Mrs. F. G. Hinsey, Pekin, Ill.....	Best embroidered table cover.....	2 00
Mrs. W. R. Sprague, Brice, O.....	2d best embroidered table cover.....	1 00
Mrs. F. G. Hinsey, Pekin, Ill.....	Best embroidered skirt.....	1 00
Mrs. W. R. Sprague, Brice, O.....	Best embroidered American flag.....	1 00
Mrs. Jane McClarty, Chillicothe, O.....	Best pair pillow shams.....	1 00
Mrs. F. G. Hinsey, Pekin, Ill.....	Best bed spread.....	2 00
Mrs. Jane McClarty, Chillicothe, O.....	Best chair cushion.....	1 00
Mrs. Sarah Semmis, Westerville, O.....	2d best chair cushion.....	50
Same .....	Best fancy quilt.....	1 00
Mrs. T. C. Booth, Marion, O.....	Best suit lady's underwear.....	1 00
Mrs. W. R. Sprague, Brice, O.....	Best table mats.....	1 00
Same .....	Best lamp mat.....	50
Mrs. Jane McClarty, Chillicothe, O.....	Best tidy .....	50
Mrs. F. G. Hinsey, Pekin, Ill.....	Best silk knit stockings.....	1 00
Same .....	Best woolen knit stockings.....	1 00
Same .....	Best woolen knit socks.....	50
Same .....	Best fancy apron.....	1 00
Mrs. T. C. Booth, Marion, O.....	Best sunbonnet .....	50

## WOMAN'S WORK — Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Children's Class.		
Bessie Case, Pekin, Ill.....	Best outline embroidery.....	1 00
Miss Helen Rochester, Quincy, Ill.....	2d best outline embroidery.....	50
Same.....	Best cross stitch work.....	1 00
Mrs. Hattie Bohlander, Marion, O.....	2d best cross stitch work.....	50
Miss Helen Rochester, Quincy, Ill.....	Best drawn thread work.....	1 00
Lulu Colman, Marion, O.....	2d best drawn thread work.....	50
Inez Plotner, West Mansfield, O.....	Best crochet work.....	1 00
Alice Wolf, Zimmer, O.....	2d best crochet work.....	50
Same.....	Best plain sewing.....	1 00
Bessie Case, Pekin, Ill.....	2d best plain sewing.....	50
Miss D. Desmond, Marion, O.....	Best specimen knitting.....	1 00
Bessie Case, Pekin, Ill.....	2d best specimen knitting.....	50
Inez Plotner, West Mansfield, O.....	Best specimen silk embroidery.....	1 00
Belle Higgins, Columbus, O.....	2d best specimen silk embroidery.....	50
Bessie Case, Pekin, Ill.....	Best specimen patching.....	1 00
Alice Wolf, Zimmer, O.....	2d best specimen patching.....	50
Lace and Tatting Work.		
Mrs. J. M. Coe, Mt. Gilead, O.....	Best point lace handkerchief.....	3 00
Mrs. U. J. Cover, Mt. Gilead, O.....	2d best point lace handkerchief.....	2 00
Mrs. J. M. Coe, Mt. Gilead, O.....	Best point lace collar.....	2 00
Maude C. Hinsey, Pekin, Ill.....	2d best point lace collar.....	1 00
Mrs. J. M. Coe, Mt. Gilead, O.....	Best point lace infant's cap.....	2 00
Mrs. C. E. Luring, Columbus, O.....	2d best point lace infant's cap.....	1 00
Mrs. J. M. Coe, Mt. Gilead, O.....	Best point lace specimen.....	2 00
Laura C. Davis, Columbus, O.....	2d best point lace specimen.....	1 00
Mrs. L. K. Roney, Troy, O.....	Best Battenburg lace specimen.....	2 00
Mrs. P. Grooms, Brecon, O.....	2d best Battenburg lace specimen.....	1 00
Maude C. Hinsey, Pekin, Ill.....	Best Battenburg table cover.....	2 00
Miss S. W. Garside, Lancaster, O.....	2d best Battenburg table cover.....	1 00
Mrs. J. M. Coe, Mt. Gilead, O.....	Best display point lace.....	3 00
Maude C. Hinsey, Pekin, Ill.....	2d best display point lace.....	2 00
Miss Lissa P. Wannan, Norwood, O.....	Best Marie Antoinette lace.....	2 00
Mrs. L. K. Roney, Troy, O.....	Best tatting collar.....	2 00
Minnie Russell, Springfield, O.....	2d best tatting collar.....	1 00
Miss Anna Miller, Indianapolis, Ind.....	Best tatting handkerchief.....	2 00
Miss Mattie Hall, Lexington, Ky.....	2d best tatting handkerchief.....	1 00
Mrs. C. H. Rudolph, Massillon, O.....	Best tatting specimen.....	2 00
Maude C. Hinsey, Pekin, Ill.....	2d best tatting specimen.....	1 00
Crochet Work.		
Mrs. Jane McClarty, Chillicothe, O.....	Best bed spread.....	3 00
Maude C. Hinsey, Pekin, Ill.....	2d best bed spread.....	2 00
Miss Mattie Hall, Lexington, Ky.....	Best lace, cotton, or linen.....	2 00
Miss Anna Miller, Indianapolis, Ind.....	2d best lace, cotton, or linen.....	1 00
Miss Mattie Hall, Lexington, Ky.....	Best lace, woolen.....	2 00
Mrs. Clara L. Sproul, Troy, O.....	2d best lace, woolen.....	1 00
Mrs. Wm. Franz, Bucyrus, O.....	Best shawl.....	2 00
Mrs. C. J. McClure, Xenia, O.....	2d best shawl.....	1 00
Mrs. E. Buck, Lockland, O.....	Best infant's sacque.....	1 00
Mrs. W. E. B. Smith, Denver, Col.....	2d best infant's sacque.....	50
Miss Anna Miller, Indianapolis, Ind.....	Best fascinator.....	1 00
Miss M. Johnson, Dayton, O.....	2d best fascinator.....	50
Mrs. P. Grooms, Brecon, O.....	2d best collar.....	50
Mrs. H. Desmond, Marion, O.....	Best toilet set.....	1 00
Miss Lissa P. Wannan, Norwood, O.....	2d best toilet set.....	50
Miss Elizabeth Leigh, Groveport, O.....	Best table mats.....	1 00
Mrs. A. N. Whiting, Columbus, O.....	2d best table mats.....	50
Mrs. Gamble Shields, Marysville, O.....	Best slippers.....	1 00
Miss S. W. Garside, Lancaster, O.....	2d best slippers.....	50
Mrs. C. J. McClure, Xenia, O.....	Best child's hood.....	1 00
Kate Bloomer, Xenia, O.....	2d best child's hood.....	50
Miss Mattie Hall, Lexington, Ky.....	Best tidy.....	1 00
Maude C. Hinsey, Pekin, Ill.....	2d best tidy.....	50
Mrs. Hattie Bohlander, Marion, O.....	Best purse.....	1 00
Miss Lissa P. Wannan, Norwood, O.....	2d best purse.....	50
Maude C. Hinsey, Pekin, Ill.....	Best skirt.....	2 00
Miss Mattie Hall, Lexington, Ky.....	2d best skirt.....	1 00
Maude C. Hinsey, Pekin, Ill.....	Best large afghan.....	3 00
Mrs. U. J. Cover, Mt. Gilead, O.....	2d best large afghan.....	2 00
Same.....	Best small afghan.....	2 00
Kate Bloomer, Xenia, O.....	2d best small afghan.....	1 00
Miss Mattie Hall, Lexington, Ky.....	Best display.....	3 00
Miss Anna Miller, Indianapolis, Ind.....	2d best display.....	2 00

## WOMAN'S WORK — Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Outline Embroidery.		
Mrs. W. R. Sprague, Brice, O.....	Best mantel lambrequin.....	2 00
Miss M. Johnson, Dayton, O.....	2d best mantel lambrequin.....	1 00
Miss S. W. Garside, Lancaster, O.....	Best bed spread.....	2 00
Mrs. W. R. Sprague, Brice, O.....	2d best bed spread.....	1 00
Miss Mattie Hall, Lexington, Ky.....	Best table cover.....	2 00
Mrs. Wm. Franz, Bucyrus, O.....	2d best table cover.....	1 00
Miss Elizabeth Leigh, Groveport, O.....	Best sofa pillow.....	2 00
Mrs. J. E. Harris, Columbus, O.....	2d best sofa pillow.....	1 00
Miss Mattie Hall, Lexington, Ky.....	Best lunch cloth.....	2 00
Mrs. K. H. Ellsworth, Toledo, O.....	2d best lunch cloth.....	1 00
Mrs. Jessie Hamilton, Columbus, O.....	Best tidy.....	1 00
Mrs. C. J. McClure, Xenia, O.....	2d best tidy.....	50
Miss M. Johnson, Dayton, O.....	Best table mats.....	2 00
Miss Mattie Hall, Lexington, Ky.....	2d best table mats.....	1 00
Mrs. L. G. Trimble, Marion, O.....	Best tray cloth.....	1 00
Miss Mattie Hall, Lexington, Ky.....	2d best tray cloth.....	50
Mrs. W. E. B. Smith, Denver, Col.....	Best six doilies.....	1 00
Miss M. Johnson, Dayton, O.....	2d best six doilies.....	50
Miss Mattie Hall, Lexington, Ky.....	Best specimen.....	1 00
Miss Anna Miller, Indianapolis, Ind.....	2d best specimen.....	50
Miss Mattie Hall, Lexington, Ky.....	Best display.....	3 00
Maude C. Hinsey, Pekin, Ill.....	2d best display.....	2 00
Embroidery — On Cotton or Linen.		
Mrs. C. M. Nichols, Columbus, O.....	Best nightdress.....	2 00
Mrs. J. L. Simmons, Columbus, O.....	2d best nightdress.....	1 00
Kate Bloomer, Xenia, O.....	Best suit underwear.....	2 00
Mrs. L. G. Trimble, Marion, O.....	2d best suit underwear.....	1 00
Maude C. Hinsey, Pekin, Ill.....	Best pair towels.....	2 00
Miss Lissa F. Wannan, Norwood, O.....	2d best pair towels.....	1 00
Mrs. J. E. Harris, Columbus, O.....	2d best tray cloth.....	1 00
Mrs. Jane McClarty, Chillicothe, O.....	Best handkerchief.....	1 00
Miss Mattie Hall, Lexington, Ky.....	2d best handkerchief.....	50
Mrs. Jane McClarty, Chillicothe, O.....	Best specimen.....	2 00
Mrs. W. R. Sprague, Brice, O.....	2d best specimen.....	1 00
Mrs. K. H. Ellsworth, Toledo, O.....	Best sideboard cover.....	1 00
Mrs. Wm. Franz, Bucyrus, O.....	2d best sideboard cover.....	50
Same.....	Best pair pillow cases and sheet.....	2 00
Mrs. E. Buck, Lockland, O.....	2d best pair pillow cases and sheet.....	1 00
Maude C. Hinsey, Pekin, Ill.....	Best table cloth and napkins.....	3 00
Mrs. Gamble Shields, Marysville, O.....	2d best table cloth and napkins.....	2 00
Cross Stitch.		
Miss Mattie Hall, Lexington, Ky.....	Best sofa pillow.....	2 00
Mrs. Clara Johnston, Cambridge, O.....	2d best sofa pillow.....	1 00
Maude C. Hinsey, Pekin, Ill.....	Best large afghan.....	3 00
Miss Anna Miller, Indianapolis, Ind.....	2d best large afghan.....	2 00
Same.....	Best small afghan.....	2 00
Mrs. E. Buck, Lockland, O.....	2d best small afghan.....	1 00
Miss Anna Miller, Indianapolis, Ind.....	Best chair cushion.....	1 00
Mrs. W. R. Sprague, Brice, O.....	2d best chair cushion.....	50
Miss Mattie Hall, Lexington, Ky.....	Best head rest.....	2 00
Miss M. Johnson, Dayton, O.....	2d best head rest.....	1 00
Fanny Fearn, Groveport, O.....	Best laundry bag.....	1 00
Miss M. Johnson, Dayton, O.....	2d best laundry bag.....	50
Mrs. W. E. B. Smith, Denver, Col.....	Best specimen cross-stitch.....	1 00
Mrs. P. Grooms, Brecon, O.....	2d best specimen cross-stitch.....	50
Miss Mattie Hall, Lexington, Ky.....	Best display.....	3 00
Maude C. Hinsey, Pekin, Ill.....	2d best display.....	2 00
Silk Embroidery.		
Mrs. E. Buck, Lockland, O.....	2d best lady's dress.....	2 00
Miss Elizabeth Leigh, Groveport, O.....	Best lady's skirt.....	2 00
Maude C. Hinsey, Pekin, Ill.....	2d best lady's skirt.....	1 00
Mrs. W. R. Sprague, Brice, O.....	Best piano cover.....	2 00
Mrs. C. M. Nichols, Columbus, O.....	Best silk handkerchief initial.....	1 00
Mrs. E. Buck, Lockland, O.....	2d best silk handkerchief initial.....	50
Mrs. W. R. Sprague, Brice, O.....	Best child's dress.....	1 00
Mrs. E. Buck, Lockland, O.....	2d best child's dress.....	50
Julia Gill, Columbus, O.....	2d best opera bag.....	50
Mrs. Jane McClarty, Chillicothe, O.....	Best monogram.....	1 00
Mrs. C. J. McClure, Xenia, O.....	2d best monogram.....	50
Mrs. E. Buck, Lockland, O.....	Best table cover.....	2 00



## WOMAN'S WORK — Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
<b>Silk Embroidery — Concluded.</b>		
Mrs. J. E. Harris, Columbus, O.....	2d best table cover.....	1 00
Maude C. Hinsey, Pekin, Ill.....	Best infant's cloak.....	2 00
Miss Anna Miller, Indianapolis, Ind.....	2d best infant's cloak.....	1 00
Maude C. Hinsey, Pekin, Ill.....	Best infant's shawl.....	1 00
Mrs. P. Grooms, Brecon, O.....	2d best infant's shawl.....	50
Maude C. Hinsey, Pekin, Ill.....	Best infant's skirt.....	1 00
Mrs. W. E. B. Smith, Denver, Col.....	2d best infant's skirt.....	50
Maude C. Hinsey, Pekin, Ill.....	Best infant's sacque.....	1 00
Mrs. Wm. Franz, Bucyrus, O.....	2d best infant's sacque.....	50
Maude C. Hinsey, Pekin, Ill.....	Best specimen.....	2 00
Mrs. Jennie Guthridge, Columbus, O.....	2d best specimen.....	1 00
Mrs. W. E. B. Smith, Denver, Col.....	Best display.....	5 00
Mrs. Wm. Franz, Bucyrus, O.....	2d best display.....	2 00
<b>Roman Embroidery.</b>		
Maude C. Hinsey, Pekin, Ill.....	Best center piece.....	2 00
Mrs. E. Buck, Lockland, O.....	2d best center piece.....	1 00
Miss Elizabeth Leigh, Groveport, O.....	Best tray cloth.....	2 00
Miss Anna Miller, Indianapolis, Ind.....	2d best tray cloth.....	1 00
Miss Mattie Hall, Lexington, Ky.....	Best lunch cloth.....	2 00
Miss Anna Miller, Indianapolis, Ind.....	2d best lunch cloth.....	1 00
Mrs. Wm. Franz, Bucyrus, O.....	Best specimen.....	2 00
Miss Mattie Hall, Lexington, Ky.....	2d best specimen.....	1 00
Mrs. E. Buck, Lockland, O.....	Best six doilies.....	2 00
Maude C. Hinsey, Pekin, Ill.....	2d best six doilies.....	1 00
Mrs. Wm. Franz, Bucyrus, O.....	Best pin cushion.....	1 00
Mrs. Hattie Bohlander, Marion, O.....	2d best pin cushion.....	50
Miss Anna Miller, Indianapolis, Ind.....	Best display.....	3 00
<b>Drawn Thread Work.</b>		
Mrs. C. H. Rudolph, Massillon, O.....	Best large table cover.....	2 00
Nellie Butler, Vinton, O.....	2d best large table cover.....	1 00
Mrs. C. H. Rudolph, Massillon, O.....	Best center piece.....	2 00
Mrs. E. Buck, Lockland, O.....	2d best center piece.....	1 00
Maude C. Hinsey, Pekin, Ill.....	Best pair pillow cases.....	2 00
Mrs. O. H. Randolph, Massillon, O.....	2d best pair pillow cases.....	1 00
Same.....	Best tray cloth.....	2 00
Miss Anna Miller, Indianapolis, Ind.....	2d best tray cloth.....	1 00
Mrs. C. H. Rudolph, Massillon, O.....	Best dresser scarf.....	2 00
Mrs. E. Buck, Lockland, O.....	2d best dresser scarf.....	1 00
Mrs. Clara L. Sproul, Troy, O.....	Best sideboard scarf.....	2 00
Mrs. C. H. Rudolph, Massillon, O.....	2d best sideboard scarf.....	1 00
Same.....	Best six doilies.....	2 00
Mrs. L. G. Trimble, Marion, O.....	2d best six doilies.....	1 00
Miss Lissa P. Wannan, Norwood, O.....	Best six dinner napkins.....	2 00
Miss M. Johnson, Dayton, O.....	2d best six dinner napkins.....	1 00
Maude C. Hinsey, Pekin, Ill.....	Best elaborate linen sheet.....	1 00
Mrs. C. J. McClure, Xenia, O.....	2d best elaborate linen sheet.....	50
Mrs. P. A. Beardsley, West Andover, O.....	Best tidy.....	1 00
Miss M. Johnson, Dayton, O.....	2d best tidy.....	50
A. Natason, Columbus, O.....	Best handkerchief.....	1 00
Mrs. C. E. Luring, Columbus, O.....	2d best handkerchief.....	50
Mrs. Clara L. Sproul, Troy, O.....	Best specimen.....	1 00
Mrs. L. G. Trimble, Marion, O.....	2d best specimen.....	50
Miss Anna Miller, Indianapolis, Ind.....	Best specimen on silk.....	1 00
Mrs. L. G. Trimble, Marion, O.....	2d best specimen on silk.....	50
Maude C. Hinsey, Pekin, Ill.....	Best specimen hemstitching.....	1 00
Mrs. Clara L. Sproul, Troy, O.....	2d best specimen hemstitching.....	50
Mrs. C. H. Rudolph, Massillon, O.....	Best display.....	3 00
Miss Mollie Koerner, Columbus, O.....	2d best display.....	2 00
<b>Ornamental Work.</b>		
Mrs. Jane McClarty, Chillicothe, O.....	Best specimen bead work.....	2 00
Miss Anna Miller, Indianapolis, Ind.....	2d best specimen bead work.....	1 00
Mrs. Awilda Slatter, Columbus, O.....	Best specimen hair work.....	2 00
Mrs. L. G. Trimble, Marion, O.....	2d best specimen hair work.....	1 00
Ada Moss, Columbus, O.....	Best display paper flowers.....	2 00
Same.....	Best display wax flowers.....	2 00
Miss Lissa P. Wannan, Norwood, O.....	Best fancy calendar.....	1 00
Miss Carrie Van Sant, Delaware, O.....	2d best fancy calendar.....	50
Mrs. C. J. McClure, Xenia, O.....	Best fancy jewel box.....	1 00
Miss M. Johnson, Dayton, O.....	2d best fancy jewel box.....	50
Miss Carrie Van Sant, Delaware, O.....	Best paper lamp shade.....	1 00
Mrs. C. J. McClure, Xenia, O.....	Best dressed doll.....	1 00

## WOMAN'S WORK — Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
<b>Ornamental Work — Concluded.</b>		
Miss M. Johnson, Dayton, O.....	2d best dressed doll.....	50
Mrs. W. E. B. Smith, Denver, Col.....	Best picture frame.....	1 00
Margaret B. Rownd, Westerville, O.....	2d best picture frame.....	50
<b>Fabric Painting.</b>		
Miss Carrie Van Sant, Delaware, O.....	Best painting on silk.....	2 00
Mrs. L. K. Roney, Troy, O.....	2d best painting on silk.....	1 00
Carrie F. Mosteller, Newark, O.....	Best painting on satin.....	2 00
Alice M. Hippie, Delaware, O.....	2d best painting on satin.....	1 00
Same.....	Best painting on velvet.....	2 00
Carrie F. Mosteller, Newark, O.....	2d best painting on velvet.....	1 00
Same.....	Best painting on bolting cloth.....	1 00
Mrs. W. E. B. Smith, Denver, Col.....	2d best painting on bolting cloth.....	1 00
Carrie F. Mosteller, Newark, O.....	Best painting on wood.....	2 00
Francis A. Bryant, Springfield, O.....	2d best painting on wood.....	1 00
Eva B. Mosteller, Newark, O.....	Best painting on celluloid.....	2 00
Mrs. E. Buck, Lockland, O.....	2d best painting on celluloid.....	1 00
Eva B. Mosteller, Newark, O.....	Best painting on ivory.....	2 00
Same.....	Best painting tapestry painting.....	2 00
Mrs. E. Buck, Lockland, O.....	2d best painting tapestry painting.....	1 00
Eva B. Mosteller, Newark, O.....	Best hand painted fan.....	2 00
Miss Carrie Van Sant, Delaware, O.....	2d best hand painted fan.....	1 00
Carrie F. Mosteller, Newark, O.....	Best hand painted plaque.....	2 00
Miss Carrie Van Sant, Delaware, O.....	2d best hand painted plaque.....	1 00
Same.....	Best hand painted screen.....	3 00
Francis A. Bryant, Springfield, O.....	2d best hand painted screen.....	2 00
Miss Carrie Van Sant, Delaware, O.....	Best hand painted banner.....	2 00
Carrie F. Mosteller, Newark, O.....	2d best hand painted banner.....	1 00
Same.....	Best display.....	5 00
Francis A. Bryant, Springfield, O.....	2d best display.....	3 00
<b>Art Needle Work — For Amateurs.</b>		
Mrs. C. H. Rudolph, Massillon, O.....	Best mantel lambrequin.....	3 00
Miss Mattie Hall, Lexington, Ky.....	2d best mantel lambrequin.....	2 00
Miss Lewis, Urbana, O.....	Best sofa pillow.....	2 00
Mrs. U. J. Cover, Mt. Gilead, O.....	2d best sofa pillow.....	1 00
Miss Mattie Hall, Lexington, Ky.....	Best lunch cloth.....	3 00
Mrs. W. L. Towns, Columbus, O.....	2d best lunch cloth.....	2 00
Miss Mattie Hall, Lexington, Ky.....	Best tray cloth.....	2 00
Mrs. P. D. Chaney, Columbus, O.....	2d best tray cloth.....	1 00
Mrs. W. L. Towns, Columbus, O.....	Best handkerchief case.....	2 00
Julia Gill, Columbus, O.....	2d best handkerchief case.....	1 00
Same.....	Best glove case.....	2 00
Mrs. W. L. Towns, Columbus, O.....	2d best glove case.....	1 00
Julia Gill, Columbus, O.....	Best nightdress case.....	2 00
Mrs. P. Grooms, Brecon, O.....	2d best nightdress case.....	1 00
Mrs. E. Buck, Lockland, O.....	2d best scrap basket.....	1 00
Miss M. Johnson, Dayton, O.....	Best table scarf.....	2 00
Maude C. Hinsey, Pekin, Ill.....	2d best table scarf.....	1 00
Miss Mattie Hall, Lexington, Ky.....	Best dresser scarf.....	2 00
Maude C. Hinsey, Pekin, Ill.....	2d best dresser scarf.....	1 00
Miss Mattie Hall, Lexington, Ky.....	Best table center.....	2 00
Maude C. Hinsey, Pekin, Ill.....	2d best table center.....	1 00
Mrs. W. L. Towns, Columbus, O.....	Best three cake doilies.....	2 00
Miss Mattie Hall, Lexington, Ky.....	2d best three cake doilies.....	1 00
Mrs. Effie Cunningham, Newark, O.....	Best six 12-inch doilies.....	2 00
Miss Mattie Hall, Lexington, Ky.....	2d best six 12-inch doilies.....	1 00
Maude C. Hinsey, Pekin, Ill.....	Best picture mat and frame.....	2 00
Mrs. Grace Guthridge, Columbus, O.....	2d best picture mat and frame.....	1 00
Miss Mattie Hall, Lexington, Ky.....	Best jewel embroidery.....	2 00
Mrs. L. K. Roney, Troy, O.....	2d best jewel embroidery.....	1 00
Mrs. U. J. Cover, Mt. Gilead, O.....	Best Bulgarian embroidery.....	2 00
Maude C. Hinsey, Pekin, Ill.....	2d best Bulgarian embroidery.....	1 00
Miss Mattie Hall, Lexington, Ky.....	2d best Colonial embroidery.....	1 00
Miss Carrie Van Sant, Delaware, O.....	Best Peruvian embroidery.....	2 00
Mrs. K. H. Ellsworth, Toledo, O.....	2d best Peruvian embroidery.....	1 00
Miss Mattie Hall, Lexington, Ky.....	Best Persian embroidery.....	2 00
Mrs. W. E. B. Smith, Denver, Col.....	2d best Persian embroidery.....	1 00
Mrs. E. Buck, Lockland, O.....	Best Oriental embroidery.....	2 00
Mrs. P. Grooms, Brecon, O.....	2d best Oriental embroidery.....	1 00
Miss Lena Simmons, Columbus, O.....	Best fire screen.....	4 00
Mrs. E. Buck, Lockland, O.....	2d best fire screen.....	2 00
Maude C. Hinsey, Pekin, Ill.....	Best table cover.....	2 00
Mrs. K. H. Ellsworth, Toledo, O.....	2d best table cover.....	1 00

## WOMAN'S WORK — Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
<b>Art Needle Work for Amateurs</b> Concluded.		
Mrs. Wm. Franz, Bucyrus, O.....	Best book cover.....	1 00
Julia Gill, Columbus, O.....	2d best book cover.....	50
Same.....	Best two magazine covers.....	2 00
Fannie Fearn, Groveport, O.....	2d best two magazine covers.....	1 00
Mrs. Effie Cunningham, Newark, O.....	Best sideboard cover.....	2 00
Mrs. D. A. Filler, Columbus, O.....	2d best sideboard cover.....	1 00
Mrs. Jessie Hamilton, Columbus, O.....	Best head rest.....	2 00
Mrs. W. E. Burse, Newark, O.....	2d best head rest.....	1 00
Miss Anna Miller, Indianapolis, Ind.....	2d best shopping bag.....	1 00
Mrs. W. E. Burse, Newark, O.....	Best laundry bag.....	2 00
Mrs. Wm. Franz, Bucyrus, O.....	2d best laundry bag.....	1 00
Mrs. F. Grooms, Brecon, O.....	Best fancy tidy.....	2 00
Miss M. Johnson, Dayton, O.....	2d best fancy tidy.....	1 00
Mrs. W. E. B. Smith, Denver, Col.....	Best fancy pin cushion.....	1 00
Mrs. W. L. Towns, Columbus, O.....	2d best fancy pin cushion.....	50
Mrs. E. Buck, Lockland, O.....	Best ottoman.....	2 00
Mrs. Jessie Hamilton, Columbus, O.....	2d best ottoman.....	1 00
Mrs. Jennie Guthridge, Columbus, O.....	Best single specimen.....	2 00
Miss Lena Simmons, Columbus, O.....	2d best single specimen.....	1 00
Mrs. Wm. Franz, Bucyrus, O.....	Best display.....	10 00
Mrs. C. H. Rudolph, Massillon, O.....	2d best display.....	5 00
<b>Art Needle Work — For Professionals.</b>		
Mrs. A. Hyson, Columbus, O.....	Best display.....	10 00
Same.....	Best table set.....	8 00
Same.....	Best single specimen.....	5 00
<b>China Painting — Amateur.</b>		
Mrs. Brundage, Xenia, O.....	Best chocolate set.....	2 00
Francis A. Bryant, Springfield, O.....	2d best chocolate set.....	1 00
Mrs. Brundage, Xenia, O.....	Best ice cream set.....	2 00
Francis A. Bryant, Springfield, O.....	2d best ice cream set.....	1 00
Mrs. M. E. Wiltberger, Columbus, O.....	Best fish set.....	2 00
Mrs. Brundage, Xenia, O.....	2d best fish set.....	1 00
Same.....	Best six cups and saucers.....	8 00
Mrs. L. K. Roney, Troy, O.....	2d best six cups and saucers.....	2 00
Mrs. Brundage, Xenia, O.....	Best six plates.....	3 00
Mrs. C. E. Basore, Columbus, O.....	2d best six plates.....	2 00
Georgia Gault, Columbus, O.....	Best teapot, sugar and creamer.....	3 00
Mrs. Grace Guthridge, Columbus, O.....	2d best teapot, sugar and creamer.....	2 00
Hattie Dobell, Columbus, O.....	Best tankard or claret pitcher.....	2 00
Mrs. Grace Guthridge, Columbus, O.....	2d best tankard or claret pitcher.....	1 00
Same.....	Best punch bowl.....	2 00
Mrs. L. K. Roney, Troy, O.....	2d best punch bowl.....	1 00
Francis A. Bryant, Springfield, O.....	Best loving cup.....	2 00
Mrs. Grace Guthridge, Columbus, O.....	Best dresser set.....	3 00
Mrs. C. E. Basore, Columbus, O.....	2d best dresser set.....	2 00
Mrs. M. E. Wiltberger, Columbus, O.....	Best jardiniere.....	2 00
Mrs. L. K. Roney, Troy, O.....	2d best jardiniere.....	1 00
Mrs. M. E. Wiltberger, Columbus, O.....	Best plaque.....	2 00
Georgia Gault, Columbus, O.....	2d best plaque.....	1 00
Mrs. L. K. Roney, Troy, O.....	Best specimen figure.....	1 00
Hattie Dobell, Columbus, O.....	2d best specimen figure.....	1 00
Francis A. Bryant, Springfield, O.....	Best specimen china painting.....	2 00
Mrs. J. P. Weisman, Columbus, O.....	2d best specimen china painting.....	1 00
Miss Elizabeth Leigh, Groveport, O.....	Best specimen gold paste.....	2 00
Virginia L. Kiser, Columbus, O.....	2d best specimen gold paste.....	1 00
Mrs. L. K. Roney, Troy, O.....	Best salad dish.....	8 00
Mrs. Brundage, Xenia, O.....	2d best salad dish.....	1 00
Miss Elizabeth Leigh, Groveport, O.....	Best cake plate.....	2 00
Mrs. L. K. Roney, Troy, O.....	2d best cake plate.....	1 00
Same.....	Best tray.....	2 00
Hattie Dobell, Columbus, O.....	2d best tray.....	1 00
Francis A. Bryant, Springfield, O.....	Best vase.....	2 00
Miss Elizabeth Leigh, Groveport, O.....	2d best vase.....	1 00
Mrs. M. E. Wiltberger, Columbus, O.....	Best display.....	5 00
Hattie Dobell, Columbus, O.....	2d best display.....	3 00
<b>China Painting — Professional.</b>		
E. L. Jenkins, Columbus, O.....	Best specimen.....	4 00
Grace Beyerly, Chillicothe, O.....	2d best specimen.....	2 00
H. W. Barnitz, Urbana, O.....	Best portrait.....	4 00

## WOMAN'S WORK — Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
<b>China Painting — Professional — Concluded.</b>		
Alta Morris, Columbus, O.....	2d best portrait.....	2 00
Same .....	Best figure .....	4 00
Laura C. Davis, Columbus, O.....	2d best figure.....	2 00
Alta Morris, Columbus, O.....	Best panel .....	3 00
Laura C. Davis, Columbus, O.....	2d best panel.....	1 00
Same .....	Best plaque .....	3 00
E. L. Jenkins, Columbus, O.....	2d best plaque.....	1 00
Alta Morris, Columbus, O.....	Best specimen conventional work.....	3 00
Laura C. Davis, Columbus, O.....	2d best specimen conventional work.....	1 00
Same .....	Best tankard or claret pitcher.....	2 00
E. L. Jenkins, Columbus, O.....	2d best tankard or claret pitcher.....	1 00
Alta Morris, Columbus, O.....	Best punch bowl.....	2 00
Laura C. Davis, Columbus, O.....	2d best punch bowl.....	1 00
Same .....	Best vase .....	3 00
E. L. Jenkins, Columbus, O.....	2d best vase.....	2 00
Laura C. Davis, Columbus, O.....	Best loving cup.....	3 00
Alta Morris, Columbus, O.....	2d best loving cup.....	2 00
E. L. Jenkins, Columbus, O.....	Best dresser set.....	3 00
Laura C. Davis, Columbus, O.....	2d best dresser set.....	2 00
E. L. Jenkins, Columbus, O.....	Best six cups and saucers.....	3 00
Laura C. Davis, Columbus, O.....	2d best six cups and saucers.....	2 00
E. L. Jenkins, Columbus, O.....	Best six plates.....	3 00
Alta Morris, Columbus, O.....	2d best six plates.....	2 00
E. L. Jenkins, Columbus, O.....	Best specimen enamel.....	2 00
Nora Prentice, Columbus, O.....	2d best specimen enamel.....	1 00
Laura C. Davis, Columbus, O.....	Best specimen paste.....	2 00
Alta Morris, Columbus, O.....	2d best specimen paste.....	1 00
C. L. Jenkins, Columbus, O.....	Best specimen metal.....	2 00
Alta Morris, Columbus, O.....	2d best specimen metal.....	1 00
Same .....	Best course set.....	4 00
Laura C. Davis, Columbus, O.....	2d best course set.....	2 00
E. L. Jenkins, Columbus, O.....	Best display .....	3 00
Laura C. Davis, Columbus, O.....	2d best display.....	5 00

## PRESERVES, PICKLES, ETC.

Owner's Name and Postoffice.	Name of Article.	Amount.
Preserves, Pickles, Etc.		
Mrs. E. G. Taggart, Lewis Center, O.....	Best canned tomatoes.....	2 00
Alice H. Latham, Columbus, O.....	2d best canned tomatoes.....	1 00
Mrs. L. G. Trimble, Marion, O.....	Best canned blackberries.....	2 00
Mrs. M. B. Clutter, Alexandria, O.....	2d best canned blackberries.....	1 00
Same.....	Best canned raspberries.....	2 00
Mrs. E. G. Taggart, Lewis Center, O.....	2d best canned raspberries.....	1 00
Mrs. M. B. Clutter, Alexandria, O.....	Best canned peaches.....	2 00
Mrs. E. G. Taggart, Lewis Center, O.....	2d best canned peaches.....	1 00
Mrs. M. B. Clutter, Alexandria, O.....	Best canned pears.....	2 00
Mrs. O. C. Stockman, Prospect, O.....	2d best canned pears.....	1 00
Mrs. M. B. Clutter, Alexandria, O.....	Best canned apples.....	2 00
Mrs. Henry Bieber, Delaware, O.....	2d best canned apples.....	1 00
Same.....	Best canned quinces.....	2 00
Mrs. S. B. McFarland, Sunbury, O.....	2d best canned quinces.....	1 00
Mrs. W. H. Snedeker, Delaware, O.....	Best canned strawberries.....	2 00
Mrs. M. B. Clutter, Alexandria, O.....	2d best canned strawberries.....	1 00
Mrs. O. C. Stockman, Prospect, O.....	Best canned cherries.....	2 00
Mrs. U. J. Cover, Mt. Gilead, O.....	2d best canned cherries.....	1 00
Mrs. S. B. McFarland, Sunbury, O.....	Best canned gooseberries.....	2 00
Mrs. M. B. Clutter, Alexandria, O.....	2d best canned gooseberries.....	1 00
Same.....	Best canned currants.....	2 00
Mrs. W. H. Snedeker, Delaware, O.....	2d best canned currants.....	1 00
Mrs. M. B. Clutter, Alexandria, O.....	Best canned grapes.....	2 00
Mrs. U. J. Cover, Mt. Gilead, O.....	2d best canned grapes.....	1 00
Mrs. M. B. Clutter, Alexandria, O.....	Best canned plums.....	2 00
Mrs. O. C. Stockman, Prospect, O.....	2d best canned plums.....	1 00
Lucy W. Taggart, Lewis Center, O.....	Best canned peas.....	2 00
Mrs. M. B. Clutter, Alexandria, O.....	2d best canned peas.....	1 00
Mrs. O. C. Stockman, Prospect, O.....	Best canned beans.....	2 00
Lucy W. Taggart, Lewis Center, O.....	2d best canned beans.....	1 00
Mrs. M. B. Clutter, Alexandria, O.....	Best canned rhubarb.....	2 00
Lucy W. Taggart, Lewis Center, O.....	2d best canned rhubarb.....	1 00
Mrs. L. G. Trimble, Marion, O.....	Best and largest variety.....	5 00
Alice H. Latham, Columbus, O.....	2d best and largest variety.....	3 00
Mrs. H. Desmond, Marion, O.....	Best variety pickles.....	5 00
Mrs. Huston Thomas, Plumwood, O.....	2d best variety pickles.....	3 00
Mrs. L. G. Trimble, Marion, O.....	Best variety jellies.....	5 00
Mrs. O. W. Seigeant, Isleta, O.....	2d best variety jellies.....	3 00
Mrs. Henry Bieber, Delaware, O.....	Best blackberry jelly.....	2 00
Mrs. W. H. Snedeker, Delaware, O.....	2d best blackberry jelly.....	1 00
Same.....	Best cherry jelly.....	2 00
Mrs. Henry Bieber, Delaware, O.....	2d best cherry jelly.....	1 00
Mrs. M. B. Clutter, Alexandria, O.....	Best cranberry jelly.....	2 00
Mrs. E. G. Taggart, Lewis Center, O.....	2d best cranberry jelly.....	1 00
Mrs. L. E. Davis, Zimmer, O.....	Best gooseberry jelly.....	2 00
Mrs. W. H. Snedeker, Delaware, O.....	2d best gooseberry jelly.....	1 00
Mrs. E. G. Taggart, Lewis Center, O.....	Best grape jelly.....	2 00
Mrs. C. W. Montgomery, Newark, O.....	2d best grape jelly.....	1 00
Mrs. E. G. Taggart, Lewis Center, O.....	Best plum jelly.....	2 00
Lucy W. Taggart, Lewis Center, O.....	2d best plum jelly.....	1 00
Mrs. M. B. Clutter, Alexandria, O.....	Best raspberry jelly.....	2 00
Mary Snedeker, Delaware, O.....	2d best raspberry jelly.....	1 00
Mrs. E. G. Taggart, Lewis Center, O.....	Best strawberry jelly.....	2 00
Mrs. Henry Bieber, Delaware, O.....	2d best strawberry jelly.....	1 00
Mrs. C. W. Montgomery, Newark, O.....	Best apple jelly.....	2 00
Mary Snedeker, Delaware, O.....	2d best apple jelly.....	1 00
Mrs. W. H. Snedeker, Delaware, O.....	Best pear jelly.....	2 00
Mrs. L. E. Davis, Zimmer, O.....	2d best pear jelly.....	1 00
Mrs. Henry Bieber, Delaware, O.....	Best crab apple jelly.....	2 00
Mrs. J. B. Norris, Columbus, O.....	2d best crab apple jelly.....	1 00
Lucy W. Taggart, Lewis Center, O.....	Best currant jelly.....	2 00
Mrs. E. G. Taggart, Lewis Center, O.....	2d best currant jelly.....	1 00
Mary Snedeker, Delaware, O.....	Best peach jelly.....	2 00
Mrs. W. H. Snedeker, Delaware, O.....	2d best peach jelly.....	1 00
Mrs. C. W. Montgomery, Newark, O.....	Best quince jelly.....	2 00
Mrs. E. G. Taggart, Lewis Center, O.....	2d best quince jelly.....	1 00
Mrs. W. H. Snedeker, Delaware, O.....	Best preserved quinces.....	2 00
Mrs. G. N. Toops, Chillicothe, O.....	2d best preserved quinces.....	1 00
Mrs. Henry Bieber, Delaware, O.....	Best preserved pears.....	2 00
Mrs. L. G. Trimble, Marion, O.....	2d best preserved pears.....	1 00
Mrs. Henry Bieber, Delaware, O.....	Best preserved apples.....	2 00
Mrs. G. N. Toops, Chillicothe, O.....	2d best preserved apples.....	1 00
Mrs. Henry Bieber, Delaware, O.....	Best preserved plums.....	2 00
Mrs. Mary A. Perry, Columbus, O.....	2d best preserved plums.....	1 00
Mrs. Henry Bieber, Delaware, O.....	Best preserved cherries.....	2 00
Mrs. Mary A. Perry, Columbus, O.....	2d best preserved cherries.....	1 00

## PRESERVES, PICKLES, ETC. — Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
Mrs. Henry Bieber, Delaware, O.....	Best preserved crab apples.....	2 00
Mrs. M. B. Clutter, Alexandria, O.....	2d best preserved crab apples.....	1 00
Same.....	Best preserved grapes.....	2 00
Mrs. G. N. Toops, Chillicothe, O.....	2d best preserved grapes.....	1 00
Minnie Bieber, Delaware, O.....	Best preserved strawberries.....	2 00
Mary nSedeker, Delaware, O.....	2d best preserved strawberries.....	1 00
Mrs. L. E. Davis, Zimmer, O.....	Best preserved blackberries.....	2 00
Miss M. McFarland, Sunbury, O.....	2d best preserved blackberries.....	1 00
Mrs. Henry Bieber, Delaware, O.....	Best preserved peaches.....	2 00
Mrs. H. Desmond, Marion, O.....	2d best preserved peaches.....	1 00
Mrs. W. H. Snedeker, Delaware, O.....	Best preserved currants.....	2 00
Mrs. M. B. Clutter, Alexandria, O.....	2d best preserved currants.....	1 00
Mrs. L. E. Davis, Zimmer, O.....	Best preserved gooseberries.....	2 00
Mrs. Mary A. Perry, Columbus, O.....	2d best preserved gooseberries.....	1 00
Mrs. Huston Thomas, Plumwood, O.....	Best preserved melons.....	2 00
Mrs. L. G. Trimble, Marion, O.....	2d best preserved melons.....	1 00
Mrs. Mary A. Perry, Columbus, O.....	Best tomato catsup.....	2 00
Mrs. U. J. Cover, Mt. Gilead, O.....	2d best tomato catsup.....	1 00
Mrs. C. M. Nichols, Columbus, O.....	Best cucumber catsup.....	2 00
Mrs. U. J. Cover, Mt. Gilead, O.....	2d best cucumber catsup.....	1 00
Mrs. Mary A. Perry, Columbus, O.....	Best pickled cucumbers.....	2 00
Mrs. H. Desmond, Marion, O.....	2d best pickled cucumbers.....	1 00
Mrs. Henry Bieber, Delaware, O.....	Best pickled peaches.....	2 00
Mrs. W. H. Snedeker, Delaware, O.....	2d best pickled peaches.....	1 00
Same.....	Best pickled pears.....	2 00
Mrs. Henry Bieber, Delaware, O.....	2d best pickled pears.....	1 00
Mrs. M. B. Clutter, Alexandria, O.....	Best mixed pickles.....	2 00
Mrs. E. G. Taggart, Lewis Center, O.....	2d best mixed pickles.....	1 00
Mrs. M. B. Clutter, Alexandria, O.....	Best pickled tomatoes.....	2 00
Mrs. G. N. Toops, Chillicothe, O.....	2d best pickled tomatoes.....	1 00
Mrs. L. G. Trimble, Marion, O.....	Best pickled mangoes.....	2 00
Lucy W. Taggart, Lewis Center, O.....	2d best pickled mangoes.....	1 00
Mrs. M. B. Clutter, Alexandria, O.....	Best pickled melons.....	2 00
Mrs. Henry Bieber, Delaware, O.....	2d best pickled melons.....	1 00
Mrs. U. J. Cover, Mt. Gilead, O.....	Best pickled onions.....	2 00
Mrs. C. M. Nichols, Columbus, O.....	2d best pickled onions.....	1 00
Mrs. L. E. Davis, Zimmer, O.....	Best pickled gherkins.....	2 00
Mrs. C. M. Nichols, Columbus, O.....	2d best pickled gherkins.....	1 00
Mrs. L. E. Davis, Zimmer, O.....	Best pickled cabbage.....	2 00
Mrs. M. B. Clutter, Alexandria, O.....	2d best pickled cabbage.....	1 00
Mrs. H. Desmond, Marion, O.....	Best pickled cauliflower.....	2 00
Mrs. L. G. Trimble, Marion, O.....	2d best pickled cauliflower.....	1 00
Mrs. E. G. Taggart, Lewis Center, O.....	Best chili sauce.....	2 00
Lucy W. Taggart, Lewis Center, O.....	2d best chili sauce.....	1 00
Mrs. M. B. Clutter, Alexandria, O.....	Best chow chow.....	2 00
Mrs. Henry Bieber, Delaware, O.....	2d best chow chow.....	1 00

## CEREAL FOODS.

Owner's Name and Postoffice.	Name of Article.	Amount.
Cereal Food.		
Mrs. Mary E. Sharp, Columbus, O.....	Best yeast bread.....	\$2 00
Mrs. U. J. Cover, Mt. Gilead, O.....	2d best yeast bread.....	1 00
Mrs. M. B. Clutter, Alexandria, O.....	Best corn bread.....	2 00
Mrs. U. J. Cover, Mt. Gilead, O.....	2d best corn bread.....	1 00
Mrs. M. B. Clutter, Alexandria, O.....	Best rye bread.....	2 00
Minnie Bieber, Delaware, O.....	2d best rye bread.....	1 00
Mrs. M. B. Clutter, Alexandria, O.....	Best brown bread.....	2 00
Mrs. L. G. Trimble, Marion, O.....	2d best brown bread.....	1 00
Mrs. U. J. Cover, Mt. Gilead, O.....	Best graham bread.....	2 00
Mrs. H. Desmond, Marion, O.....	2d best graham bread.....	1 00
Mrs. J. B. Norris, Columbus, O.....	Best domestic raised biscuits.....	2 00
Mrs. W. H. Snedeker, Delaware, O.....	2d best domestic raised biscuits.....	1 00
Mrs. U. J. Cover, Mt. Gilead, O.....	Best layer cake.....	2 00
Lucy W. Taggart, Lewis Center, O.....	2d best layer cake.....	1 00
Mrs. U. J. Cover, Mt. Gilead, O.....	Best white loaf cake.....	2 00
Mrs. Marie Davis, Westerville, O.....	2d best white loaf cake.....	1 00
Mrs. M. B. Clutter, Alexandria, O.....	Best fruit cake.....	2 00
Mrs. Marie Davis, Westerville, O.....	2d best fruit cake.....	1 00
Mrs. U. J. Cover, Mt. Gilead, O.....	Best marble cake.....	2 00
Mrs. Marie Davis, Westerville, O.....	2d best marble cake.....	1 00
Same.....	Best chocolate layer cake.....	2 00
Mrs. U. J. Cover, Mt. Gilead, O.....	2d best chocolate layer cake.....	1 00
Mrs. W. J. Carty, Columbus, O.....	Best caramel cake.....	2 00
Lucy W. Taggart, Lewis Center, O.....	2d best caramel cake.....	1 00
Mrs. J. V. Scheele, Columbus, O.....	Best cocoanut cake.....	2 00
Mrs. U. J. Cover, Mt. Gilead, O.....	2d best cocoanut cake.....	1 00
Mrs. M. B. Clutter, Alexandria, O.....	Best ginger snaps.....	1 00
Same.....	Best sweet wafers.....	1 00

## FINE ARTS—SAMUEL TAYLOR, Member in Charge.

Owner's Name and Postoffice.	Name of Article.	Amount.
<b>Oil Paintings.</b>		
H. W. Barnitz, Urbana, O.....	Best portrait .....	\$8 00
Alice Schille, Columbus, O.....	2d best portrait.....	4 00
H. W. Barnitz, Urbana, O.....	Best figure piece.....	5 00
Alice Schille, Columbus, O.....	2d best figure piece.....	3 00
H. W. Barnitz, Urbana, O.....	Best animal piece.....	8 00
Same .....	Best landscape .....	5 00
Same .....	Best Ohio landscape.....	5 00
W. J. Norris, Columbus, O.....	2d best Ohio landscape.....	3 00
Alice Schille, Columbus, O.....	Best fruit or flower piece.....	5 00
H. W. Barnitz, Urbana, O.....	2d best fruit or flower piece.....	3 00
Same .....	Best still life piece.....	5 00
Same .....	Best exhibition .....	15 00
Alice Schille, Columbus, O.....	2d best exhibition .....	8 00
<b>Water Color Painting.</b>		
H. W. Barnitz, Urbana, O.....	Best portrait .....	5 00
Daisy M. Scott, Columbus, O.....	2d best portrait.....	3 00
H. W. Barnitz, Urbana, O.....	Best figure piece.....	4 00
W. J. Norris, Columbus, O.....	2d best figure piece.....	2 00
H. W. Barnitz, Urbana, O.....	Best Ohio landscape.....	4 00
E. L. Jenkins, Columbus, O.....	2d best Ohio landscape.....	2 00
Same .....	Best fruit or flower piece.....	4 00
H. W. Barnitz, Urbana, O.....	2d best fruit or flower piece.....	2 00
Same .....	Best still life piece.....	4 00
E. L. Jenkins, Columbus, O.....	Best exhibition .....	10 00
H. W. Barnitz, Urbana, O.....	2d best exhibition.....	5 00
<b>Pastels.</b>		
H. W. Barnitz, Urbana, O.....	Best portrait .....	4 00
Alice Schille, Columbus, O.....	2d best portrait.....	2 00
Eva B. Mosteller, Newark, O.....	Best landscape .....	4 00
H. W. Barnitz, Urbana, O.....	2d best landscape.....	2 00
Eva B. Mosteller, Newark, O.....	Best animal or game piece.....	4 00
H. W. Barnitz, Urbana, O.....	2d best animal or game piece.....	2 00
Same .....	Best fruit or flower piece.....	4 00
Eva B. Mosteller, Newark, O.....	2d best fruit or flower piece.....	2 00
H. W. Barnitz, Urbana, O.....	Best figure piece.....	4 00
A. B. Stewart, Columbus, O.....	2d best figure piece.....	2 00
<b>Miscellaneous.</b>		
H. W. Barnitz, Urbana, O.....	Best freehand crayon or charcoal portrait.....	3 00
Same .....	Best freehand crayon or charcoal landscape.....	3 00
W. J. Norris, Columbus, O.....	Best pen and ink drawing.....	3 00
Same .....	2d best pen and ink drawing.....	1 00
H. W. Barnitz, Urbana, O.....	Best bas-relief in terra cotta, clay, plaster, marble or bronze.....	4 00
Mrs. H. W. Barnitz, Urbana, O.....	Best bust in sculpture.....	3 00
Same .....	Best figure or animal in sculpture.....	3 00
<b>Oil Paintings—Amateurs.</b>		
Maud Myers, Columbus, O.....	Best portrait .....	5 00
Same .....	2d best portrait.....	3 00
Virginia L. Kiser, Columbus, O.....	Best figure piece.....	3 00
Maud Myers, Columbus, O.....	2d best figure piece.....	1 00
Minnie Russell, Springfield, O.....	Best animal piece.....	3 00
Alice M. Hipple, Delaware, O.....	2d best animal piece.....	1 00
Same .....	Best landscape .....	3 00
Harriet Rhoads, Columbus, O.....	2d best landscape.....	1 00
Alice M. Hipple, Delaware, O.....	Best Ohio landscape.....	3 00
Maud Myers, Columbus, O.....	2d best Ohio landscape.....	1 00
Same .....	Best fruit or flower piece.....	3 00
Same .....	2d best fruit or flower piece.....	1 00
Same .....	Best still life piece.....	3 00
Alice M. Hipple, Delaware, O.....	2d best still life piece.....	1 00
Maud Myers, Columbus, O.....	Best exhibition .....	10 00
<b>Water Color Paintings.</b>		
Miss Carrie Van Sant, Delaware, O.....	Best portrait .....	4 00
Daisy M. Scott, Columbus, O.....	2d best portrait.....	2 00
Ursula DeLong, Columbus, O.....	Best figure piece.....	3 00



## FINE ARTS — Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
<b>Water Color Paintings — Concluded.</b>		
Carrie F. Mosteller, Newark, O.....	2d best figure piece.....	1 00
Daisy M. Scott, Columbus, O.....	Best Ohio landscape.....	3 00
Francis A. Bryant, Springfield, O.....	2d best Ohio landscape.....	1 00
Carrie F. Mosteller, Newark, O.....	Best fruit or flower piece.....	3 00
Virginia L. Kiser, Columbus, O.....	2d best fruit or flower piece.....	1 00
Same .....	Best still life-piece.....	3 00
Francis A. Bryant, Springfield, O.....	2b best still life piece.....	1 00
Ursula DeLong, Columbus, O.....	Best exhibition .....	3 00
<b>Pastels.</b>		
Minnie Russell, Springfield, O.....	Best portrait .....	4 00
A. B. Stewart, Columbus, O.....	2d best portrait.....	2 00
Francis A. Bryant, Springfield, O.....	Best landscape .....	3 00
Same .....	2d best landscape.....	1 00
E. L. Jenkins, Columbus, O.....	Best fruit or flower.....	3 00
Francis A. Bryant, Springfield, O.....	2d best fruit or flower.....	1 00
Same .....	Best figure piece.....	3 00
<b>Miscellaneous.</b>		
Maud Myers, Columbus, O.....	Best freehand crayon or charcoal portrait.	2 00
Same .....	2d best freehand crayon or charcoal portr't	1 00
F. G. Steele, Newark, O.....	Best display of drawings.....	4 00
Maud Myers, Columbus, O.....	2d best display of drawings.....	2 00
Alice M. Hipple, Delaware, O.....	Best display photography.....	2 00
Jas. E. Taggart, Lewis Center, O.....	2d best display photography.....	1 00
Maud Myers, Columbus, O.....	Best specimen of work in terra cotta, clay, plaster or marble.....	3 00
Same .....	2d best specimen of work in terra cotta, clay, plaster or marble.....	1 00
Mrs. S. E. Butt, Nelsonville, O.....	Best screen in wood carving.....	4 00
Same .....	2d best screen in wood carving.....	2 00
Mrs. W. M. Codner, Canal Winchester, O..	Best mantel in wood carving.....	4 00
Mrs. S. E. Butt, Nelsonville, O.....	Best chair in wood carving.....	3 00
Same .....	2d best chair in wood carving.....	1 00

## EXHIBITS IN NON-PREMIUM DEPARTMENTS.

## AGRICULTURAL IMPLEMENTS AND MACHINERY.

ALBERT HALE—Member in Charge.

- Akron Cultivator Co., Akron O.....Riding and walking cultivators.
- Allen & Co., S. L., Philadelphia, Pa.....Horse cultivators, garden drills, wheel hoes, etc.
- American Steel and Wire Co., Chicago, Ill..Woven wire fence and gates.
- American Harrow Co., Detroit, Mich.....Cultivators, disc harrows, platform scales and manure spreader.
- Avery & Sons, B. F., Columbus, O.....Sulky plows, steel evener, etc.
- Avery Manufacturing Co., Peoria, Ill.....Riding and walking cultivators, corn planter, stalk cutter, wagons, etc.
- American Buncher Mfg. Co., Indianapolis, Ind.....Hay, clover buncher and mower.
- Bateman Manufacturing Co., Grenlock, N. J..Cultivators, potato planter and garden tools.
- Bradley, David, Manufacturing Co., Bradley, Ill.....Hay press, sulky plow, corn planter, cultivators, riding and walking; potato digger, shovel plow, harrow, etc.
- Bickford & Huffman Co., Macedon, N. Y...Drill.
- Burch Plow Works Co., Crestline, O.....Plows.
- Bean, Chamberlain Co., Hudson, Mich....Riding and walking plows, cultivators, harrows, pumps, wind mills, farm tanks and tank heater.
- Buch, A. Sons & Co., Elizabethtown, Pa....Corn shellers, feed cutters, styler troughs and tanks, rollers, etc.
- Bowen Cable Stay Fence Co., Norwalk, O..Wire fence, wire reel and fence machine.
- Brown, George A., New Holland, O.....Farm gate.
- Brown Manufacturing Co., Zanesville, O....Wagons, riding and walking cultivators, double and single shovel plows, etc.
- Brown-Manley Plow Co., Columbus, O....Cultivators, plows, harrows, weeders and shovel plows.
- Bowker Fertilizer Co., Boston, Mass.....Fertilizers.
- Bucher & Gibbs Plow Co., Canton, O.....Sulky plows, walking plows, disc and spike tooth harrows and cultivators.
- Behrens, Chas. W.....Hay rack, wood rack, etc.
- Bond Steel Post Fence Co., Adrian, Mich...Fence and posts.
- Bowser, Geo. H., Northampton, O.....Lawn swing.
- Black Hawk Corn Planter Co., Fostoria, O..Plain and fertilizer corn drills and planters.
- Cedar Rapids Pump Co., Columbus, O.....Wood and iron pumps, hose and fittings.
- Clipper Plow Co., Defiance, O.....Sulky plow, walking cultivator and breaking plows.
- Chicago Fertilizer Co., Chicago, Ill.....Fertilizer, etc.
- Coquilhard Wagon Co., South Bend, Ind...Wagons.

Collins Plow Co., Delaware, O.....	Hay presses, cultivators, harrows, etc.
Case & Co., J. I., Racine, Wis.....	Engines, separators, four-wheeled stacker, wind stacker, weigher and feeder.
Cyclone Fence Co., Holly, Mich.....	Wire fence and fence machines.
Carter Wire Fence Machine Co., Mt. Sterling, O.....	Woven and coiled wire, gates, etc.
Carpenter, T. F., Derby, O.....	Fence machine.
Champion Evaporator Co.....	Evaporators.
Champion Wagon Co., Oswego, N. Y.....	Wagons and grain drills.
Cleveland Dryer Co., Cleveland O.....	Fertilizers.
Chase Pump Co., Columbus, O.....	Pumps, hose and fixtures.
Chandler Fence Co., Baltimore, Md.....	Fences.
Columbus Machine Co., Columbus, O.....	Engines.
Chicago Scale Co., Chicago, Ill.....	Scales.
Dunham & Sons, J. W., Berea, O.....	Land roller and pulverizer.
Dain Manufacturing Co., Carrollton, Mo....	Corn cutters, feed mills, scoop boards.
Deuscher, H. P. Co., Hamilton, O.....	Corn planters and drills, disc harrow, drags, etc.
Evans, A. C., Springfield O.....	Corn planters and drills, potato planter, disc harrow, spike and wood harrows and spring, tooth harrows.
Empire Drill Co., Louisville, Ky.....	Two-horse drills.
Empire Harvesting Machine Co., Doylestown, O.....	Mower and binder.
Eureka Mower Co., Eureka, N. Y.....	Mower, harrows, potato and corn planters, etc.
Fulton Machine Co, The, Canal Fulton, O..	Land roller.
Flint & Walling Mfg. Co., Kendallville, Ind..	Feed mills and cutters, pumps, tanks, etc.
Foos Manufacturing Co., Springfield, O....	Feed mills, corn harvester and sheller.
Frost Wire Fence Co., Cleveland, O.....	Wire fence and gates.
Geiser Manufacturing Co., Columbus, O....	Engines, hullers, separators and stackers.
Gagel, H. N., Dayton, O.....	Cream separator and transplanter.
German Kali Work.....	Potash.
Hayes Pump Co., Galva, Ill.....	Pumps, corn planters, cultivators and agricultural implements.
Harrison Co., W. R., Massillon, O.....	Feed cutters, carrier and land roller.
Hench & Dromgold, York, Pa.....	Riding and walking cultivators, spring-tooth harrows, grain drill, potato digger, corn sheller, cider mills, feed cutters and lawn chairs.
Harris Co., H. D., Maple Heights, O.....	Cream separators.
Hydraulic Press Mfg. Co., Mt. Gilead, O...	Hydraulic cider press, bagger and weigher for threshing machines.
Harding Manufacturing Co., Nashville, Tenn.....	Hammer fodder and ensilage cutter.
Hoffheim Bros., Tontogany, O.....	Fencing.

- Heller, Aller & Co., Napoleon, O.....Mills, pumps and tanks.  
 Hoover-Prout Co., Avery, O.....Potato digger  
 Hoosier Drill Co., Richmond, Ind.....Drills and planters.  
 Hathaway Gate Co., Greenville, O.....Gates.  
 Hixson & Co.....Adjustable Sieves.  
 Hercules Lawn Swing, Covington, O.....Swing.  
 Jones National Fence Co., Columbus, O....Wire fence.  
 Kerns, J. A., Amanda, O.....Fanning mills.  
 Keystone Farm Machine Co., New Water-  
 ford, O.....Corn sheller, cutting boxes, cider  
 mill, power sheller, weeders and  
 cultivators.  
 Kansas City Hay Press Co., Columbus, O...Hay presses, stump puller, scales,  
 wagons, etc.  
 Keystone Manufacturing Co., Columbus, O..Corn husker, fodder shredder, hay  
 press, hay loader, corn planter,  
 disc harrow, cultivator, corn  
 sheller, potato planter, barrel  
 carts, harrow spikes, etc.  
 Kokomo Fence Machine Co., Kokomo, Ind.Wire fence, gates, fence machinery  
 and cemetery fence.  
 Knoop, Josiah, Troy, O.....Rotary harrow.  
 Kimberlin, D. D., Hudson O.....Potato bug destroyer.  
 Long & Allstatter Co., Hamilton, O.....Plows, cultivator, harrow sulky and  
 walking disc harrow.  
 Lima Locomotive Machine Co., Lima, O...Hay press.  
 Lemon, John T., Columbus, O.....Grain weigher.  
 Milburn Wagon Co. Toledo, O.....Wagons and buggies.  
 Marcy Manufacturing Co., R. G., Bluffton,  
 Ind.....Wind mills, pump, tanks and well  
 supplies.  
 Mason & Co., W. H., Leesburg, O.....Wire fence.  
 Mast & Co., P. P., Springfield, O.....Drills, cultivators and cider mills.  
 Morris & Co., Nelson, Chicago, Ill.....Fertilizers and meats.  
 Moline Plow Co., Moline, Ill.....Plows; riding and walking cultiva-  
 tors, corn planters, drill, harrows,  
 wagons, etc.  
 McSherry Manufacturing Co., Middletown,  
 O.....Drills, disc harrows and transplanter  
 Myer & Bro., F. E., Ashland, O.....Pumps, fixtures and haying tools.  
 Metcalf, C. A., Omar, O.....Fence machine.  
 Mast, Foos & Co., Springfield, O.....Wind mills, grinders, pumps and  
 tanks, well supplies.  
 Orrville Machine Co., Orrville, O.....Engine, separator, with stacker,  
 hullers.  
 Ohio Cultivator Co., Columbus, O.....Cultivators, harrows, rollers, disc  
 harrows.  
 Osborn & Co., D. M., Auburn, N. Y.....Binders, corn harvesters, mowers,  
 hay rakes, disc harrows, spring-  
 tooth harrows, cultivators, etc.  
 Ohio Rake Co., Dayton, O.....Corn planters, hay loaders, hay  
 rakes, harrows, lawn swing and  
 hammock, corn shellers, swing  
 chair, lawn seat. etc.

Ohio Artificial Stone Tank Co., Leipsic, O.	Tanks.
Oliver Chilled Plow Works, South Bend, Ind.	Sulky and walking plows.
Ohio Farmers' Fertilizer Co., Columbus, O.	Fertilizers.
O'Harra & Kaufman, Plain City, O.	Gate.
Palm, J. H., Lexington, O.	Butter worker.
Prouty, F. D., Columbus, O.	Hay presser, safety corn husker, clover huller.
Page Fence Co., Adrian, Mich.	Woven wire fence, etc.
Potts Machine Co., Columbus, O.	Cream separator.
Parlin Orendorff Co., Canton, Ill.	Riding and walking cultivators and plows.
Princess Plow Co., Canton, O.	Plows, rooter, harrows, land rollers, etc.
Parrish Fence Co., Richmond, Ind.	Fence machine and fence.
Paschal, F. M., Marion, O.	Fence.
Price Bros., Marysville, O.	Gate.
Reid, A. H., Philadelphia, Pa.	Creamery supplies and dairy fixtures.
Ripley Hardware Co., Grafton, Ill.	Feed cooker.
Roderick Lean Mfg. Co., Mansfield, O.	Steel harrows.
Rasin Fertilizer Co., Baltimore, Md.	Fertilizers.
Ross, E. W. & Co., Camp Chase, O.	Ensilage cutters, feed cutters, corn shellers and corn mills.
Rosenthal Husking Co., Milwaukee, Wis.	Engine and corn husker.
Russell & Co., Massillon, O.	Engine, separator and stacker, weigher.
Rock Island Plow Co., Rock Island, Ill.	Disc harrows, cultivators, corn drills, hay loaders, plows, potato digger, etc.
Rock Plaster Mfg. Co., Columbus, O.	Rock plaster and cement.
South Bend Plow Co., South Bend, Ind.	Sulkies, cultivators, etc.
Stewart, A. T. & Co., Pittsburg, Pa.	Plows, pumps, etc.
Star Manufacturing Co., New Lexington, O.	Power mills, etc.
Sandwich Manufacturing Co., Sandwich, Ill.	Steam hay press, Southwick hay press, hay loader, feed mills, corn shellers.
Springfield Fertilizer Co., Springfield, O.	Fertilizers.
Spartan Manufacturing Co., Aurora, Ill.	Feed grinder and engine.
Shimer Woven Wire Fence Co., Anderson, Ind.	Woven wire fence.
Shunk Plow Co., Bucyrus, O.	Plows.
Smally Manufacturing Co., Manitowoc, Wis.	Feed and ensilage cutter.
Superior Drill Co., Springfield, O.	Drills, harrows, cider mills, hay tools, etc.
Syracuse Plow Co.	Plows, harrows, etc.
Stoddard Manufacturing Co., Dayton, O.	Corn planters, cultivators, plows, harrows, rakes, drills, corn harvesters, etc.
Sheidler Machine Co., Newark, O.	Traction engine.
Schaab, A. K., Smithville, O.	Drag crusher and corn marker.
The Good Road Machine Co., Canton, O.	Graders, crushers, scrapers, plows, etc.
Troy Wagon Works, Troy, O.	Wagons.
The New Era Iron Works, Dayton, O.	Gasoline engine.
Thomas Manufacturing Co., Springfield, O.	Rakes, pumps, bicycles, lawn mowers, harrows, etc.

- The Standard Harrow Co., Utica, N. Y..... Harrows, disc pulverizers, rollers, plows, cultivators, post diggers, weeders, etc.
- The Phelps & Bigelow Wind Mill Co., Kalamazoo, Mich..... Mills and towers, steel tanks, feed cutters, grinders, etc.
- U. S. Butter Extractor, Newark, N. J..... Cream separator.
- Vermont Farm Machine Co., Bellows Falls, Vt..... Cream separators, churns, dog power, milk, testers, etc.
- Wonder Churn Co., Dayton, O..... Churns.
- Woodcock Foundry and Machine Co., Chillicothe, O..... Steam and horse power mills.
- Warnes Wire Fence Machine Co., Morenci, Mich..... Fence machine.
- Whitely Manufacturing Co., Springfield, O..... Mowers, grinding mill and corn sheller.
- Wood, Walter A., Hoosick Falls, N. Y..... Binders, mowers, rakes, twine, etc.
- Wayne Works, Richmond, Ind..... Drills, planters, swings, wagons, carts, etc.
- White Gate Co..... Gates.

#### MECHANICS' AND MANUFACTURERS' PRODUCTS.

D. J. GREEN — Member in Charge.

- American Machine Co., Columbus, O..... Carriages, buggies, harness and robes.
- Blackwood, Green & Co., Columbus, O..... Stoves, kitchen and household outfittings.
- Buckeye Saw Mfg. Co., Columbus, O..... Saws and saw mill supplies.
- Chase, F. H., & Co., Chicago, Ill..... Automatic sad iron rest.
- Central Ohio Buggy Co., Galion, O..... Carriages, buggies, phaetons, etc.
- Durant & Dort, Flint, Mich..... Spring wagons, buggies, etc.
- Gaumer, E. G. & Sons, Urbana, O..... Pony phaetons, traps, etc.
- Galion Buggy Co., Galion, O..... Buggies, etc.
- Hertenstein, M. & Co., Coulmbus, O..... Stoves, heating and cooking.
- Harlon, E. J., Harrisburg, O..... Patent buggy singletree.
- Howard, A. A., Galion, O..... Buggies, surries, etc.
- Immel, John & Son., Columbus, O..... Buggies, surries, phaetons, delivery wagons, etc.
- Ling Vansickle Buggy Co., Middletown, O..... Buggies, carriages, etc.
- Moon, George, Columbus, O..... Sheet iron baking ovens.
- Monarch Buggy Co., Columbus, O..... Buggies, phaetons, etc.
- Ohio Graphophone Co., Columbus, O..... Graphophone, phonographs.
- Ohlen, James & Sons, Columbus, O..... Saws and saw mill supplies.
- Outhouse, Wm., Earlville, N. Y..... Milk wagons.
- Parsons, Chas., Columbus, O..... Traps and fancy carts.
- Piqua Wagon & Buggy Co., Piqua, O..... Buggies, carriages, wagons, etc.
- Peabody Buggy Co., Fostoria, O..... Surries, carriages, buggies, etc.
- Ricketts, W. M. & Co., Columbus, O..... Eureka cistern water filter.
- Rich, Munk & Co., Columbus, O..... Heating and cooking stoves, etc.
- Roderick, Thos., Columbus, O..... Natural gas heater and ovens.
- Seeley and Beery, Columbus, O..... Cooking and heating stoves, steel ranges.
- Schoedinger Fearn & Co., Columbus, O..... Heating and cooking stoves and kitchen utensils.

## MERCHANDISE, MUSIC, ETC.

Allen, W. R., Columbus, O.....	Exterminator.
Bott Bros., Columbus, O.....	Bar fixtures, billiard tables, cues, balls, etc.
Bell Picture Frame Co., Columbus, O.....	Frames and easels.
Baird, Eben & Co., Columbus, O.....	Shoes.
Columbus Mirror Co., Columbus, O.....	Mirrors.
Clark, J. H., Columbus, O.....	Musical charts.
Darby, Dr., Columbus, O.....	Information in regard to homeless children.
Fels Naptha Soap Co., Philadelphia, Pa.....	Soap.
Freeman, F. W., Columbus, O.....	Butter, made from peanuts.
Franklin Bicycle Co., Columbus, O.....	Bicycles.
Goldsmith, I., Columbus, O.....	Embroidering machine.
Goodin, J. H., Jacksonville, Fla.....	Shells and fancy shell work.
Hesket & Jones, Columbus, O.....	Furniture, carpets, curtains and stoves.
Harsh, L. A. & Co., Columbus, O.....	Stoves, ranges and kitchen furniture.
Hallwood Cash Register Co., Columbus, O..	Cash registers.
Keever Starch Co., Columbus, O.....	Victor starch.
Lawrence, Dr. J. A. & Co., Columbus, O....	Acetylene gas generator.
McAllister, Mohler & Co., Columbus, O...	Furniture.
McFarland, Dr. R., Columbus, O.....	Capsules.
Minor, W. E. & Co., Cleveland, O.....	Disinfectant.
McClelland, Laura, Columbus, O.....	Curtain and picture hanger.
National Cash Register Co., Dayton O.....	Cash registers.
Onyx Paint Co., Columbus, O.....	Paints, varnish and stains.
Ohio Self-Heating Flat Iron Co., Shreve, O.	Flat Irons heated by gasoline.
Puntenney & Entsler, Columbus, O.....	Pianos and organs.
Parsons Business College, Columbus, O....	Penmanship.
Stallman Trunk Factory, Columbus, O.....	Dresser trunks, telescopes and safes.
Stauffer, J. H., Mansfield, O.....	Sheet music.
Sells, B., Columbus, O.....	Jewett typewriter.
Wyandotte Engraving Co., Columbus, O....	Engraving, rubber stamps, etc.
Westlake, E. W., Columbus, O.....	Glassware and glass engraving.

ABSTRACTS FROM REPORTS OF COUNTY AGRICULTURAL SOCIETIES FOR 1899.

TABLE I—COUNTY FAIRS IN OHIO FOR 1899.

Counties.	President.	Postoffice.	Treasurer.	Postoffice.
Adams .....	W. S. Kincaid.....	West Union.....	H. W. Dickinson.....	West Union.
Allen .....	William Rusler.....	Hume .....	D. H. Crites.....	Kempton.
Ashtabula .....	H. H. Poole .....	Conneaut .....	C. L. Taylor .....	Jefferson.
Athens .....	N. W. Baker .....	Chaucney .....	Wm. Scott .....	Athens.
Auglaize .....	Ferry Focht .....	Unioipolis .....	T. E. Bowsher .....	Buckland.
Belmont .....	A. C. Darrah.....	St. Clairsville .....	E. G. Amos.....	St. Clairsville.
Brown .....	V. K. Thompson.....	Georgetown .....	Ben. B. Whitman.....	Georgetown.
Butler .....	J. A. Slade .....	Hamilton .....	W. B. Wallace.....	Oxford.
Carroll .....	Wm. L. Smeltz, Jr.....	Carrollton .....	T. J. Sallsman .....	Carrollton.
Champaign .....	C. H. Ganson.....	Urbana .....	H. P. Wilson.....	Urbana.
Clark .....	T. L. Calvert.....	Selma .....	Fred Shellebarger.....	Enon.
Clermont .....	John W. Patton.....	Bethel .....	J. O. Rapp.....	Owensville.
Columbiana .....	J. W. Hoopes.....	Salem .....	B. N. Brown.....	Gavers.
Coshocton .....	J. P. Darling.....	Nellie .....	Corwin McCoy.....	Coshocton.
Crawford .....	J. A. McMichael.....	Bucyrus .....	M. Auck .....	Bucyrus.
East Cuyahoga .....	L. R. Dunham.....	Bedford .....	W. E. Rodgers.....	Chagrin Falls.
West Cuyahoga .....	George C. Mastick.....	Rockport .....	W. J. Poots.....	Strongsville.
Darke .....	J. M. Brown.....	Delisle .....	Ed. Ammon .....	Gordon.
Delaware .....	Andrew J. Harter.....	Delaware .....	R. M. Avery.....	Delaware.
Erie .....	C. W. Taylor.....	Sandusky .....	S. C. Prout.....	Prout
Fairfield .....	Daniel Crumley.....	Lancaster .....	C. B. Whaley .....	Lancaster.
Fayette .....	Nye Gregg .....	Washington C. H. .....	O. S. Mallon.....	Washington C. H.
Fulton .....	L. G. Ely .....	Fayette .....	W. A. Blake .....	Wauseon.
Geauga .....	H. M. Wells .....	Claridon .....	H. C. Tuttle .....	Burton.
Greene .....	R. E. Corry.....	Yellow Springs .....	H. L. Smith.....	Xenia.
Guernsey .....	A. J. Clark .....	Cambridge .....	R. S. Frame.....	Washington.
Hamilton .....	Frank Fox .....	Cincinnati .....	E. H. Huffman.....	Sharonville.
Hancock .....	W. S. Randall.....	McComb .....	Jacob Stark .....	Findlay.
Hardin .....	W. F. Hufford.....	Ada .....	Horton Park .....	Kenton.



## COUNTY FAIRS IN OHIO FOR 1899 — Continued.

Counties.	President.	Postoffice.	Treasurer.	Postoffice.
Harrison .....	Oliver Robb .....	Unionvale .....	S. R. Hamilton .....	Cadiz .....
Jefferson .....	G. G. Bargar .....	Smithfield .....	Charles McKinney .....	Smithfield .....
Lawrence .....	J. P. Eaton .....	Lafayette .....	C. J. Reynolds .....	Proctorville .....
Licking .....	G. R. Taylor .....	Thompson .....	A. J. Crilly .....	Newark .....
Logan .....	W. F. Williamson .....	West Liberty .....	David Fuson .....	Logansville .....
Lorain .....	J. L. Reed .....	N. Ridgeville .....	J. E. Willard .....	Elyria .....
Madison .....	L. W. Kilgore .....	London .....	M. L. Rea .....	London .....
Mahoning .....	North Newton .....	Boardman .....	C. C. Fowler .....	Canfield .....
Marion .....	N. C. Rapp .....	Marion .....	D. M. Odaffer .....	Marion .....
Medina .....	James M. Crawford .....	Seville .....	Blake Hendrickson .....	Medina .....
Meigs .....	P. B. Stanbery .....	Pomeroy .....	John McQuigg .....	Pomeroy .....
Mercer .....	S. H. Weaver .....	Early .....	J. M. Winter .....	Celina .....
Miami .....	T. S. Scott .....	Troy .....	D. M. Coppock .....	Pleasant Hill .....
Monroe .....	W. C. Mooney .....	Woodfield .....	W. C. Mooney .....	Woodfield .....
Montgomery .....	J. McLain Smith .....	Dayton .....	Samuel Wampler .....	Dayton .....
Morgan .....	John G. Walker .....	McConnelsville .....	James W. McElhiney .....	McConnelsville .....
Morrow .....	W. A. Ferguson .....	Shauk .....	J. G. Russell .....	Mt. Gilead .....
Muskingum .....	S. A. Baldwin .....	Zanesville .....	J. E. Tanner .....	Zanesville .....
Noble .....	Dr. W. S. Spriggs .....	Sarahsville .....	C. L. Hellyer .....	Sarahsville .....
Ottawa .....	John Orth .....	Port Clinton .....	B. W. Wilson .....	Port Clinton .....
Paulding .....	Dr. J. L. Slager .....	Paulding .....	W. B. Jackson .....	Paulding .....
Perry .....	T. J. Tracy .....	New Lexington .....	Patrick Coyle .....	New Lexington .....
Portage .....	C. R. Doolittle .....	Streetsboro .....	Chas. H. Laubert .....	Ravenna .....
Preble .....	Frank Mitchell .....	Eaton .....	C. F. Brooke, Jr. ....	Eaton .....
Putnam .....	A. L. Paul .....	Ottawa .....	C. H. Rice .....	Ottawa .....
Ross .....	Clark W. Story .....	Chillicothe .....	Theo. Spetnagel .....	Chillicothe .....
Sandusky .....	L. Nickel .....	Hessville .....	William A. Cabel .....	Fremont .....
Scioto .....	D. T. Blackburn .....	Rarden .....	W. A. McGeorge .....	Mt. Joy .....
Stark .....	J. R. Bowman .....	Canton .....	H. A. Wise .....	Canton .....
Summit .....	M. L. Sprankle .....	Bath .....	George W. Brewster .....	Akron .....

Trumbull .....	S. F. Bartlett.....	Warren .....	C. M. Wilkins.....	Warren.....
Tuscarawas .....	J. L. Kennedy.....	New Philadelphia .....	V. Wentz.....	Canal Dover.....
Union .....	Thomas P. Shields.....	Watkins .....	C. S. Chapman.....	Marysville.....
Van Wert.....	J. S. Stuckey.....	Lebanon .....	E. B. Gilliland.....	Van Wert.....
Warren .....	Hue Bone .....	Marietta .....	F. M. Cunningham.....	Lebanon.....
Washington .....	Ed. Flanders .....	Van Wert .....	J. H. McConnell.....	Marietta.....
Wayne .....	J. C. Sidle.....	Blachleyville .....	W. A. Wilson.....	Wooster.....
Wood .....	M. A. Matheny.....	Custer .....	E. B. Beverstock.....	Tontogany.....
Wyandot .....	C. D. Hare.....	Upper Sandusky .....	Henry Kear.....	Upper Sandusky.....

## COUNTY FAIRS IN OHIO FOR 1899, WITH TIME AND PLACE.

Counties.	Secretary.	Postoffice.	Time of Fair.	Place of Fair.
Adams	T. W. Ellison.	West Union	September 12, 13, 14 and 15.	West. Union.
Allen	T. B. Bowersock.	Lima	October 10, 11, 12 and 13.	Lima.
Ashabula	Chas. C. Babcock.	Jefferson	September 26, 27, 28 and 29.	Jefferson.
Athens	C. H. Porter.	Athens	October 3, 4, 5, and 6.	Athens.
Auglaize	A. E. Schaffer.	Wapakoneta	September 19, 20 and 21.	Wapakoneta.
Belmont	T. C. Ayers.	St. Clairsville	October 3, 4, 5, and 6.	St. Clairsville.
Brown	J. W. Hedrick.	Russellville	October 2, 3, 4, 5 and 6.	Georgetown.
Butler	W. A. Shafor.	Hamilton	September 27, 28 and 29.	Hamilton.
Carroll	C. A. Tope.	Carrollton	August 15, 16, 17 and 18.	Carrollton.
Champaign	J. W. Crowl.	Urbana	August 22, 23, 24 and 25.	Urbana.
Clark	William Jenkins	Seth	August 28, 29, 30, 31 and Sept. 1.	Springfield.
Clermont	John Rowan	Blowville	September 12, 13 and 14.	Boston.
Columbiana	E. F. Moore.	Lisbon	October 10, 11, 12 and 13.	Lisbon.
Coshocton	Robert Boyd	Coshocton	October 10, 11, 12 and 13.	Coshocton.
Crawford	G. W. Miller.	Bucyrus	September 12, 13, 14 and 15.	Bucyrus.
East Cuyahoga	George B. Huggett.	Chagrin Falls	September 19, 20 and 21.	Chagrin Falls.
West Cuyahoga	C. H. Busby.	Berea	August 28, 29, 30, 31 and Sept 1.	Berea.
Darke	T. C. Maher.	Greenville	September 27, 28 and 29.	Greenville.
Delaware	E. A. Furniss.	Galena	September 19, 20, 21 and 22.	Deleware.
Erie	John T. Mack.	Sandusky	October 11, 12, 13 and 14.	Sandusky.
Fairfield	W. T. McClenaghan.	Lancaster	August 15, 16, 17 and 18.	Lancaster.
Fayette	N. B. Hall.	Washington C. H.	September 19, 20, 21 and 22.	Washington C. H.
Fulton	Thomas Mikesell.	Wauseon	September 19, 20, 21 and 22.	Ottokee.
Gauga	P. W. Parmelee.	Burton	August 8, 9, 10 and 11.	Burton.
Greene	R. R. Grieve.	Xenia	September 26, 27, 28 and 29.	Xenia.
Guernsey	H. D. McCulloch.	Washington	August 15, 16, 17, 18 and 19.	Washington.
Hamilton	D. L. Sampson.	Silverton	September 5, 6, 7, 8 and 9.	Carthage.
Hancock	Wm. Demland.	Findlay	September 26, 27, 28 and 29.	Findlay.
Hardin	W. M. Cooney.	Kenton	October 3, 4 and 5.	Kenton.
Harrison	J. G. Milhiken.	Cadiz	September 27, 28 and 29.	Cadiz.
Jefferson	J. O. Hayne.	Smithfield		Smithfield.

Lawrence	W. W. Reckard	Proctorville	September 13, 14 and 15.	Proctorville.
Licking	I. M. Phillips	Newark	September 26, 27, 28 and 29.	Newark.
Logan	E. Pat Chamberlain	Bellefontaine	October 3, 4, 5 and 6.	Bellefontaine.
Lorain	W. B. Johnson	Elyria	September 12, 13, 14 and 15.	Elyria.
Madison	E. B. Pancake	London	August 29, 30, 31 and Sept. 1.	London.
Mahoning	B. L. Manchester	Hickory	September 26, 27 and 28.	Canfield.
Marion	J. E. Waddell	Marion	September 26, 27, 28 and 29.	Marion.
Medina	Hiram Goodwin	Medina	September 5, 6 and 7.	Medina.
Meigs	Edw. L. Keiser	Pomeroy	September 20, 21 and 22.	Rock Springs.
Mercer	C. W. Halfhill	Mercer	August 21, 22, 23, 24 and 25.	Celina.
Miami	W. I. Tenney	Troy	September 26, 27, 28 and 29.	Troy.
Monroe	George P. Dorr	Woodsfield	August 29, 30 and 31.	Woodsfield.
Montgomery	W. J. Ferguson	Dayton	September 12, 13, 14, 15 and 16.	Dayton.
Morgan	P. H. Tannehill	McConnellsville	September 26, 27 and 28.	McConnellsville.
Morrow	O. J. Miller	Mt. Gilead	October 3, 4, 5 and 6.	Mt. Gilead.
Muskingum	J. D. Mercer	Carlwick	September 12, 13, 14 and 15.	Zanesville.
Noble	Arthur McWilliams	Sarahsville	September 26, 27 and 28.	Sarahsville.
Oakawa	T. S. Johnson	Gypsum	September 19, 20 and 21.	Port Clinton.
Paulding	Con. Ragan	Paulding	September 5, 6, 7 and 8.	Paulding.
Perry	Charles C. Chapplear	New Lexington	September 19, 20, 21 and 22.	New Lexington.
Portage	Lafayette Smith	Ravenna	September 26, 27, 28 and 29.	Ravenna.
Preble	Henry H. Farr	Eaton	September 25, 26, 27, 28 and 29.	Eaton.
Putnam	A. P. Sandles	Ottawa	October 3, 4, 5, 6 and 7.	Ottawa.
Ross	A. P. Minshall	Chillicothe	August 8, 9, 10 and 11.	Chillicothe.
Sandusky	J. C. Overmyer	Fremont	October 3, 4, 5 and 6.	Fremont.
Scioto	W. A. McGeorge	Mt. Joy	August 30, 31 and Sept. 1.	Mt. Joy.
Stark	J. H. Lehman	Canton	September 26, 27, 28 and 29.	Canton.
Summit	Albert Hale	Akron or Mogadore	October 3, 4, 5 and 6.	Akron.
Trumbull	James L. Kennedy	Warren	September 5, 6 and 7.	Warren.
Tuscarawas	H. W. Streb	Canal Dover	August 29, 30, 31 and Sept. 1.	Canal Dover.
Union	E. W. Porter	Marysville	October 3, 4, 5 and 6.	Marysville.
Van Wert	O. D. Swartout	Van Wert	September 12, 13, 14 and 15.	Van Wert.
Warren	George W. Carey	Lebanon	September 19, 20, 21 and 22.	Lebanon.
Washington	Henry G. Bohl	Marietta	September 19, 20, 21 and 22.	Marietta.
Wayne	I. N. Kinney	Wooster	September 26, 27 and 28.	Wooster.
Wood	W. S. Haskell	Bowling Green	September 26, 27, 28 and 30.	Bowling Green.
Wyandot	Oscar Billhardt	Upper Sandusky	October 3, 4, 5 and 6.	Upper Sandusky.

TABLE II—CATTLE.

Counties.	Short Horns.			Devons.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams .....	1	\$44 00	\$5 00			
Allen .....	16	70 50	49 50	14	\$70 50	\$42 50
Ashtabula .....	14	79 00	39 00		52 00	
Athens .....	9	50 00	30 00			
Auglaize .....				3	62 00	18 00
Belmont .....	10	31 00	14 00		31 00	
Brown .....	7	50 00	12 00			
Butler .....	10	77 00	58 00			
Carroll .....	30	66 00	58 00			
Champaign .....	8	76 00	30 00			
Clark .....	12	70 00	49 00	13	70 00	59 00
Clermont .....	12	68 00	51 00			
Columbiana .....	27	54 00	49 00			
Coshocton .....	28	88 00	84 00	16	88 00	67 50
Crawford .....	15					
East Cuyahoga .....		35 50		9	35 50	20 00
West Cuyahoga .....	20	51 25	45 75			
Darke .....	22	48 00	48 00			
Delaware .....	2	45 00	5 00		45 00	
Erie .....	15	58 50	49 50			
Fairfield .....	25	98 00	76 00			
Fulton .....	24	63 00	55 50	11	63 00	36 00
Greene .....		80 00		18	80 00	65 00
Guernsey .....	18	66 00	56 00	9	66 00	36 00
Hamilton .....	11	100 00	69 00			
Hancock .....		65 00			65 00	
Hardin .....	17	96 00	72 00			
Harrison .....	19	53 00	40 00			
Jefferson .....	10	46 00	24 00			
Lawrence .....	7	27 50				
Licking .....	4	85 00	27 00	1	76 00	
Logan .....	*32	69 00	65 00			
Lorain .....	12	59 40	59 40			
Madison .....	33	69 00	66 00			
Mahoning .....	*17	83 00	69 00		83 00	
Marion .....	20	65 00	42 00			
Medina .....	37	56 50	42 75			
Mercer .....	36	74 00	70 00	10	74 00	41 00
Miami .....	5	72 00	21 00	11	72 00	38 00
Monroe .....	11	46 00	31 00		46 00	
Montgomery .....		*99 00				
Morgan .....	13	37 00	23 00		37 00	
Morrow .....	1	70 00	5 00		70 00	
Muskingum .....	10	85 00	39 75	15	85 00	50 50
Paulding .....	1	65 00	3 00			
Perry .....	4	37 00	14 00	1	37 00	4 00
Portage .....		41 50		9	41 50	24 50
Preble .....	10	82 00	63 00		82 00	
Putnam .....	7	84 00	56 00	10	84 00	38 00
Ross .....	5	56 00	22 00			
Sandusky .....	15	96 00	67 00			

TABLE II — CATTLE — Continued.

Counties.	Short Horns.			Devons.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Scioto .....	11	40 00	28 00	.....	.....	.....
Shelby .....	3	93 00	17 00	.....	44 00	.....
Stark .....	6	90 00	39 00	.....	.....	.....
Summit .....	32	121 00	121 00	.....	.....	.....
Trumbull .....	12	53 00	35 00	.....	.....	.....
Tuscarawas .....	19	52 00	46 00	.....	.....	.....
Union .....	6	73 00	19 00	.....	.....	.....
Van Wert .....	11	86 00	63 00	11	86 00	63 00
Warren .....	10	49 00	37 00	.....	43 00	.....
Washington .....	*9	40 00	22 00	.....	40 00	.....
Wayne .....	16	52 00	41 00	.....	.....	.....
Wood .....	12	62 00	43 00	.....	62 00	.....
Wyandot .....	2	66 00	10 00	.....	.....	.....
Totals .....	811	\$4,069 65	\$2,376 15	161	\$1,790 00	\$603 00

\*Includes Herefords.

TABLE II—CATTLE—Continued.

Counties.	All Polled Breeds.			Herefords.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams .....	2	\$44 00	\$10 00	5	\$44 00	\$25 00
Allen .....	51	211 50	140 00	16	70 50	54 00
Ashtabula .....	22	104 00	45 00	.....	.....	.....
Athens .....	.....	.....	.....	3	.....	12 00
Auglaize .....	33	124 00	109 00	17	62 00	48 00
Belmont .....	.....	31 00	.....	.....	31 00	.....
Brown .....	4	50 00	11 00	5	50 00	30 00
Butler .....	11	154 00	59 00	.....	77 00	.....
Carroll .....	.....	100 00	.....	.....	.....	.....
Champaign .....	.....	152 00	.....	.....	.....	.....
Clark .....	80	280 00	182 00	.....	70 00	.....
Clermont .....	9	68 00	25 00	.....	68 00	.....
Columbiana .....	.....	54 00	.....	.....	.....	.....
Coshocton .....	16	88 00	70 00	15	88 00	68 50
Crawford .....	14	.....	.....	.....	.....	.....
East Cuyahoga .....	1	71 00	4 00	.....	35 00	.....
West Cuyahoga .....	27	102 50	61 25	.....	.....	.....
Darke .....	36	192 00	121 00	16	48 00	40 00
Delaware .....	.....	45 00	.....	.....	.....	.....
Erie .....	.....	117 00	.....	.....	58 50	.....
Fairfield .....	3	98 00	25 00	27	.....	.....
Fulton .....	35	126 00	106 00	8	63 00	24 00
Greene .....	23	160 00	119 00	.....	.....	.....
Guernsey .....	16	66 00	47 00	6	66 00	22 00
Hamilton .....	60	200 00	174 00	24	100 00	91 00
Hancock .....	8	142 00	39 00	.....	65 00	.....
Hardin .....	14	192 00	52 00	.....	.....	.....
Harrison .....	11	47 00	30 00	.....	.....	.....
Jefferson .....	.....	.....	.....	.....	46 00	.....
Lawrence .....	2	27 50	.....	.....	.....	.....
Licking .....	.....	.....	.....	5	76 00	30 00
Logan .....	12	69 00	42 50	*	.....	.....
Lorain .....	18	59 40	59 40	16	59 40	59 40
Madison .....	16	138 00	66 00	.....	.....	.....
Mehoning .....	.....	.....	.....	*	.....	.....
Marion .....	14	65 00	51 00	4	65 00	20 00
Mercer .....	14	148 00	80 00	.....	74 00	.....
Miami .....	32	216 00	149 00	12	72 00	49 00
Monroe .....	3	46 00	12 00	.....	46 00	.....
Montgomery .....	22	198 00	144 00	*	.....	.....
Morgan .....	.....	37 00	.....	6	37 00	15 00
Morrow .....	.....	70 00	.....	.....	70 00	.....
Muskingum .....	24	170 00	96 75	10	85 00	39 00
Paulding .....	15	64 50	27 75	8	65 50	21 75
Perry .....	6	37 00	13 00	.....	.....	.....
Portage .....	.....	83 00	.....	.....	41 50	.....
Preble .....	8	164 00	47 00	.....	82 00	.....
Putnam .....	25	84 00	73 00	13	84 00	48 00
Ross .....	10	112 00	40 00	.....	56 00	.....
Sandusky .....	12	96 00	49 00	14	96 00	61 00
Scioto .....	.....	.....	.....	5	40 00	16 00

TABLE II—CATTLE—Continued.

Counties.	All Polled Breeds.			Herefords.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Shelby .....	12	93 00	40 00	.....	93 00	.....
Stark .....	15	180 00	64 00	.....	90 00	.....
Trumbull .....	.....	58 00	.....	.....	.....	.....
Tuscarawas .....	11	52 00	34 00	.....	.....	.....
Union .....	15	73 00	61 00	5	46 00	15 00
Van Wert .....	22	172 00	74 00	.....	.....	.....
Warren .....	14	43 00	23 00	.....	.....	.....
Washington .....	.....	59 00	.....	.....	.....	.....
Wood .....	12	186 00	48 00	1	62 00	4 00
Wyandot .....	.....	66 00	.....	.....	.....	.....
Totals .....	810	\$5,885 40	\$2,723 65	241	\$2,882 40	\$792 65



TABLE II — CATTLE — Continued.

Counties.	Jerseys.			Holsteins.		
	No. of Entries.	Amount Offered.	Amount Awarded.	No. of Entries.	Amount Offered.	Amount Awarded.
Adams .....	7	\$44 00	\$35 00	.....	\$44 00	.....
Allen .....	36	70 50	68 00	.....	.....	.....
Ashtabula .....	34	79 00	58 00	3	79 00	7 00
Athens .....	8	.....	25 00	6	.....	22 00
Auglaize .....	27	62 00	62 00	.....	.....	.....
Belmont .....	.....	31 00	.....	4	31 00	9 00
Brown .....	20	60 00	58 00	2	50 00	4 00
Butler .....	29	77 00	73 00	11	77 00	59 00
Carroll .....	12	50 00	25 00	18	50 00	40 00
Champaign .....	30	76 00	71 00	17	76 00	65 00
Clark .....	15	70 00	61 00	.....	70 00	.....
Clermont .....	22	73 00	65 00	.....	.....	.....
Columbiana .....	34	54 00	54 00	12	54 00	33 00
Coshocton .....	30	88 00	88 00	54	88 00	88 00
Crawford .....	3	.....	.....	5	260 00	174 00
East Cuyahoga .....	14	35 50	28 00	17	35 50	27 50
West Cuyahoga .....	31	51 25	49 25	14	51 25	36 25
Darke .....	20	38 00	38 00	10	64 00	50 00
Delaware .....	.....	45 00	.....	.....	45 00	.....
Erie .....	15	58 50	40 50	20	58 50	48 50
Fairfield .....	27	98 00	94 00	.....	98 00	.....
Fulton .....	18	63 00	48 50	14	63 00	42 00
Greene .....	68	162 00	162 00	.....	.....	.....
Guernsey .....	14	66 00	50 00	4	66 00	10 00
Hamilton .....	.....	.....	.....	20	100 00	93 00
Hancock .....	2	67 00	10 00	.....	65 00	.....
Hardin .....	19	76 00	73 00	8	64 00	38 00
Jefferson .....	13	46 00	30 00	22	46 00	44 00
Lawrence .....	5	27 50	.....	3	27 50	.....
Licking .....	25	75 00	68 00	.....	36 00	.....
Logan .....	23	69 00	52 00	.....	.....	.....
Lorain .....	18	59 40	59 40	.....	59 40	.....
Madison .....	24	69 00	62 00	22	69 00	54 00
Mahoning .....	15	83 00	69 00	26	83 00	.....
Marion .....	15	65 00	42 00	5	65 00	21 00
Medina .....	22	46 50	44 00	9	46 50	20 00
Meigs .....	4	48 00	21 00	.....	.....	.....
Mercer .....	18	74 00	68 00	24	74 00	65 00
Miami .....	9	72 00	47 00	2	72 00	10 00
Monroe .....	11	46 00	.....	.....	46 00	.....
Montgomery .....	11	99 00	73 00	.....	.....	.....
Morgan .....	2	37 00	6 00	.....	37 00	.....
Morrow .....	8	70 00	35 00	.....	.....	.....
Muskingum .....	15	85 00	49 00	.....	85 00	.....
Paulding .....	.....	28 50	.....	.....	48 00	.....
Perry .....	1	37 00	3 00	.....	.....	.....
Portage .....	4	41 50	12 50	10	41 50	29 50
Preble .....	.....	82 00	.....	14	82 00	73 00
Putnam .....	.....	.....	.....	9	84 00	38 00
Ross .....	17	56 00	50 00	12	56 00	42 00

TABLE II — CATTLE — Continued.

Counties.	Jerseys.			Holsteins.		
	No. of Entries.	Amount Offered.	Amount Awarded.	No. of Entries.	Amount Offered.	Amount Awarded.
Sandusky .....	9	96 00	43 00	.....	96 00	.....
Scioto .....	10	40 00	16 00	.....	.....	.....
Shelby .....	2	93 00	7 00	.....	93 00	.....
Stark .....	35	90 00	90 00	.....	90 00	.....
Summit .....	39	121 00	121 00	23	121 00	105 00
Trumbull .....	*5	58 00	18 00	†13	58 00	40 00
Union .....	28	46 00	39 00	11	46 00	34 00
Van Wert .....	3	86 00	20 00	.....	.....	.....
Warren .....	2	46 00	7 00	.....	.....	.....
Wayne .....	9	52 00	26 50	11	52 00	23 50
Wood .....	*15	62 00	40 00	14	62 00	46 00
Wyandot .....	6	66 00	17 00	6	66 00	26 00
Totals .....	958	\$3,767 15	\$2,571 65	475	\$3,331 15	\$1,517 25

TABLE II — CATTLE — Continued.

Counties.	Ayrshires.			Guernseys.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Ashtabula .....		\$52 00				
Belmont .....		31 00			\$31 00	
Clark .....		70 00				
East Cuyahoga .....	11	35 50	\$25 00		35 50	
West Cuyahoga .....	28	51 25	51 25			
Darke .....				16	38 00	\$38 00
Delaware .....				1	18 00	3 00
Erie .....	1	58 50				
Fulton .....		63 00				
Lorain .....	14	59 40	59 40			
Medina .....	22	46 50	43 25			
Miami .....					72 00	
Monroe .....		46 00			46 00	
Morgan .....		37 00				
Portage .....	5	41 50	13 50			
Sandusky .....	8	48 00	24 00			
Trumbull .....	See	Holsteins		See	Jerseys	
Van Wert .....				8	86 00	46 00
Wood .....		62 00		See	Jerseys	
Totals .....	89	\$701 65	\$216 40	25	\$326 50	\$87 00

TABLE II — CATTLE — Continued.

Counties.	All Other Pure Breeds.			Sweepstakes where Different Breeds Compete.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Allen .....	7	\$25 50	\$16 00	.....	.....	.....
Ashtabula .....	7	52 00	.....	.....	\$20 00	\$20 00
Athens .....	.....	.....	.....	2	16 00	16 00
Auglaize .....	.....	.....	.....	21	50 00	33 00
Belmont .....	.....	31 00	.....	1	6 00	4 00
Clark .....	.....	.....	.....	31	58 00	58 00
Clermont .....	.....	.....	.....	1	15 00	15 00
Columbiana .....	.....	.....	.....	7	32 00	20 00
Coshocton .....	44	176 00	143 50	41	192 00	192 00
Crawford .....	.....	.....	.....	12	.....	.....
East Cuyahoga .....	12	37 00	23 00	8	19 00	19 00
West Cuyahoga .....	16	51 25	42 25	.....	.....	.....
Darke .....	.....	.....	.....	54	310 00	310 00
Erie .....	.....	58 50	.....	.....	.....	.....
Fairfield .....	.....	.....	.....	30	72 00	72 00
Fulton .....	19	30 00	23 50	.....	.....	.....
Greene .....	.....	.....	.....	20	90 00	75 00
Guernsey .....	5	29 00	8 00	14	50 00	50 00
Hamilton .....	.....	.....	.....	26	286 00	263 50
Hancock .....	1	24 00	8 00	.....	.....	.....
Hardin .....	.....	.....	.....	42	280 00	220 00
Harrison .....	.....	.....	.....	12	56 00	27 00
Jefferson .....	.....	.....	.....	5	54 00	40 00
Licking .....	.....	.....	.....	12	58 00	53 00
Logan .....	6	54 00	21 00	12	50 00	32 00
Madison .....	.....	.....	.....	22	80 00	80 00
Mahoning .....	.....	.....	.....	8	50 00	50 00
Marion .....	20	65 00	30 00	31	84 00	71 00
Medina .....	17	30 00	16 75	22	50 00	50 00
Meigs .....	12	54 00	40 00	.....	.....	.....
Mercer .....	.....	.....	.....	18	20 00	20 00
Miami .....	.....	.....	.....	34	125 00	85 00
Monroe .....	1	16 00	2 00	.....	.....	.....
Montgomery .....	25	150 00	108 00	.....	.....	.....
Morgan .....	5	37 00	10 00	11	24 00	20 00
Morrow .....	.....	.....	.....	10	56 00	30 00
Noble .....	13	60 00	25 00	.....	.....	.....
Paukding .....	10	25 50	16 75	6	25 00	25 00
Portage .....	.....	.....	.....	6	36 00	13 50
Preble .....	.....	.....	.....	6	30 00	30 00
Putnam .....	22	84 00	80 00	42	63 00	63 00
Ross .....	.....	.....	.....	11	69 00	34 00
Sandusky .....	6	40 00	32 00	4	30 00	24 00
Shelby .....	.....	.....	.....	.....	10 00	.....
Tuscarawas .....	3	60 00	10 00	3	20 00	20 00
Van Wert .....	.....	.....	.....	18	90 00	90 00
Warren .....	.....	.....	.....	7	53 00	46 00
Washington .....	41	143 00	95 50	.....	.....	.....
Wood .....	11	74 00	35 00	11	93 00	93 00
Wyandot .....	.....	.....	.....	1	10 00	10 00
Totals .....	303	\$1,406 75	\$786 25	624	\$2,732 00	\$2,374 00

TABLE II—CATTLE AND HORSES.

Counties.	Fat Cattle and Work Oxen.			Thoroughbreds (Running Horses.)		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams .....	15	\$31 00	\$29 00	.....	.....	.....
Ashtabula .....	1	26 00	3 00	.....	.....	.....
Athens .....	5	35 00	16 00	4	\$60 00	\$17 00
Auglaize .....	.....	.....	.....	5	58 00	21 00
Belmont .....	.....	11 00	.....	1	25 00	4 00
Brown .....	2	10 00	8 00	.....	.....	.....
Butler .....	.....	.....	.....	12	200 00	200 00
Carroll .....	5	14 00	11 00	.....	.....	.....
Clark .....	.....	42 00	.....	.....	93 00	.....
Coshocton .....	3	20 00	6 00	6	95 00	32 00
Crawford .....	5	49 50	12 50	.....	.....	.....
Cuyahoga .....	4	13 50	9 00	.....	.....	.....
Darke .....	.....	.....	.....	22	425 00	302 50
Erie .....	.....	.....	.....	.....	28 50	.....
Fulton .....	.....	15 00	.....	.....	.....	.....
Greene .....	.....	.....	.....	.....	12 00	.....
Guernsey .....	1	17 00	.....	.....	.....	.....
Hamilton .....	.....	.....	.....	22	200 00	200 00
Harrison .....	3	8 00	2 00	.....	.....	.....
Jefferson .....	10	26 00	20 00	.....	.....	.....
Lawrence .....	4	40 00	.....	.....	.....	.....
Licking .....	.....	41 00	.....	7	91 00	42 00
Logan .....	1	20 00	6 00	.....	.....	.....
Lorain .....	6	23 00	23 00	.....	.....	.....
Madison .....	.....	.....	.....	9	71 00	20 50
Marion .....	9	33 00	25 00	.....	.....	.....
Medina .....	34	45 75	45 75	.....	.....	.....
Meigs .....	1	59 00	12 00	.....	.....	.....
Mercer .....	.....	.....	.....	2	82 00	15 00
Monroe .....	.....	.....	.....	.....	64 00	.....
Morgan .....	3	20 00	11 00	.....	70 00	.....
Noble .....	18	63 00	26 50	.....	.....	.....
Paulding .....	.....	27 00	.....	3	37 00	7 50
Perry .....	4	25 00	9 50	.....	.....	.....
Portage .....	6	42 00	11 00	6	50 00	5 00
Putnam .....	13	126 00	52 00	15	350 00	210 00
Sandusky .....	7	23 00	20 00	.....	.....	.....
Warren .....	.....	.....	.....	25	265 00	265 00
Washington .....	14	23 50	23 50	5	43 50	10 00
Wood .....	5	47 00	18 00	.....	.....	.....
Totals .....	184	\$976 25	\$399 75	144	\$2,320 50	\$1,351 50

TABLE II—HORSES—Continued.

Counties.	Roadsters.			General Purpose.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams .....	37	\$225 00	\$205 00	63	\$156 00	\$138 00
Allen .....	9	31 50	18 00	7	28 50	20 00
Ashtabula .....	26	72 00	62 00	96	72 00	62 00
Athens .....	23	61 00	37 00	18	59 00	41 00
Auglaize .....	15	59 00	50 50	28	59 00	56 00
Belmont .....	30	75 00	39 00	18	58 50	23 00
Brown .....	39	150 00	140 00	54	120 00	110 00
Butler .....	75	212 00	212 00	94	212 00	212 00
Carroll .....	49	94 00	76 00	43	94 00	76 00
Champaign .....	122	142 00	136 00	50	78 00	70 00
Clark .....	67	163 00	135 00	24	88 00	73 00
Clermont .....	37	117 00	105 00	71	150 00	122 00
Columbiana .....	37	98 00	85 00	28	98 00	62 00
Coshocton .....	46	141 00	78 50	50	141 00	118 00
Crawford .....	26	.....	.....	12	.....	.....
East Cuyahoga .....	33	55 50	45 50	20	60 50	40 50
West Cuyahoga .....	30	67 00	50 50	15	47 25	32 25
Darke .....	68	150 00	150 00	33	135 00	115 00
Delaware .....	11	56 00	28 00	7	57 00	18 00
Erie .....	23	86 00	44 50	10	86 00	37 50
Fairfield .....	102	132 00	132 00	70	132 00	132 00
Fulton .....	50	154 50	95 50	18	70 50	30 00
Greene .....	38	75 00	72 00	21	77 00	43 00
Guernsey .....	38	82 00	81 00	44	85 00	85 00
Hamilton .....	105	204 00	204 00	116	219 00	207 00
Hancock .....	23	104 00	55 00	4	104 00	18 00
Hardin .....	35	150 00	121 00	20	150 00	88 00
Harrison .....	6	8 00	8 00	.....	.....	.....
Jefferson .....	38	114 00	80 00	18	68 00	50 00
Lawrence .....	3	25 00	.....	.....	.....	.....
Licking .....	38	133 00	117 00	27	98 00	57 00
Logan .....	131	260 50	218 50	104	154 00	129 50
Lorain .....	11	64 20	62 00	14	64 20	64 20
Madison .....	64	113 00	100 00	.....	.....	.....
Mahoning .....	48	219 00	112 00	46	138 00	82 00
Marion .....	57	194 00	142 00	40	67 00	60 00
Medina .....	65	83 25	62 50	30	45 75	27 00
Meigs .....	3	119 00	92 00	4	26 00	18 00
Mercer .....	59	121 00	115 00	40	121 00	100 00
Miami .....	53	207 00	197 00	56	174 00	143 00
Monroe .....	.....	32 00	.....	14	64 00	39 00
Montgomery .....	25	123 00	69 00	6	73 50	19 00
Morgan .....	9	60 00	29 00	14	60 00	20 00
Morrow .....	37	145 00	80 00	13	32 00	25 00
Muskingum .....	50	140 00	117 50	42	141 00	118 25
Noble .....	9	75 00	24 50	14	120 00	29 00
Ottawa .....	2	16 00	8 00	.....	.....	.....
Paulding .....	21	72 00	32 75	11	77 00	15 25
Perry .....	6	39 00	17 50	3	39 00	11 00
Portage .....	11	74 50	11 00	20	74 50	44 00
Preble .....	64	134 00	124 00	63	134 00	129 00

TABLE II — HORSES — Continued.

Counties.	Roadsters.			General Purpose.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Putnam .....	94	249 00	162 00	31	124 00	71 00
Ross .....	29	116 00	77 00	16	58 00	52 00
Sandusky .....	33	130 00	67 00	54	142 00	119 00
Scioto .....	9	45 00	25 00	.....	.....	.....
Shelby .....	33	116 00	65 00	34	146 00	69 00
Stark .....	50	273 00	206 00	26	99 00	63 00
Summit .....	48	153 00	116 50	34	96 50	87 50
Trumbull .....	52	64 00	60 00	32	64 00	49 00
Tuscarawas .....	22	128 00	62 00	10	68 00	29 00
Union .....	55	82 00	73 00	.....	.....	.....
Van Wert .....	14	100 00	83 00	20	100 00	50 00
Warren .....	28	92 00	80 00	36	108 00	89 00
Washington .....	21	129 50	42 00	14	61 00	18 00
Wayne .....	39	105 00	67 50	19	57 00	32 50
Wood .....	75	197 00	146 00	.....	.....	.....
Wyandot .....	24	114 00	88 00	6	96 00	37 00
Totals .....	2,630	\$7,621 45	\$5,697 25	1,885	\$5,629 70	\$3,970 45

TABLE II — HORSES — Continued.

Counties.	Draft Horses, all Classes.			Coach Horses, all Classes.		
	No. of Entries.	Amount Offered.	Amount Awarded.	No. of Entries.	Amount Offered.	Amount Awarded.
Adams .....	42	\$201 00	\$111 00	2	\$19 00	\$3 00
Allen .....	34	220 50	83 00	2	66 00	6 00
Ashtabula .....	27	72 00	49 00			
Athens .....	11	59 00	32 00	5	62 00	20 00
Auglaize .....	31	118 00	67 00	1	59 00	8 00
Belmont .....	4	60 50	9 00			
Brown .....	27	120 00	95 00	9	35 00	40 00
Butler .....	27	134 00	129 00	62	131 00	131 00
Carroll .....	33	94 00	77 00			
Champaign .....	89	148 00	100 00			
Clark .....	20	234 00	177 00	4	116 00	40 00
Clermont .....	43	153 00	133 00			
Columbiana .....	13	98 00	45 00			
Coshocton .....	21	141 50	80 00	7	76 00	32 00
Crawford .....	8					
East Cuyahoga .....	4	53 50	14 00	10	13 00	13 00
West Cuyahoga .....	13	67 00	29 50	5	67 00	22 50
Darke .....	42	138 00	105 00	28	135 00	96 00
Delaware .....	21	170 00	47 00		50 00	
Erie .....	21	86 00	14 00	16	48 50	26 50
Fairfield .....	58	132 00	117 00			
Fulton .....	50	234 00	125 00	1	82 50	
Greene .....	17	73 00	45 00	10	25 00	25 00
Guernsey .....	21	90 00	57 00			
Hancock .....	6	95 00	37 00	2	104 00	14 00
Hardin .....	35	210 00	108 00	3	75 00	26 00
Harrison .....	30	57 00	28 00	44	57 00	43 00
Jefferson .....	25	135 00	90 00			
Lawrence .....	6	42 00				
Licking .....	24	90 00	64 00	24	126 00	120 00
Logan .....	94	235 00	175 00			
Lorain .....	18	128 40	96 00	3	64 20	16 00
Madison .....	40	221 00	111 50	38	83 00	79 00
Mahoning .....	13	119 00	43 00			
Marion .....	66	266 00	130 00			
Medina .....	26	71 25	34 00	45	71 25	53 50
Meigs .....	6	114 00	71 00			
Mercer .....	14	121 00	62 00	4	121 00	15 00
Miami .....	54	306 00	221 00	13	175 00	77 00
Monroe .....	7	32 00	24 00			
Montgomery .....	30	168 00	98 50	16	115 50	51 50
Morgan .....	12	62 00	19 00		20 00	
Morrow .....	40	150 00	94 00			
Muskingum .....	38	140 00	116 00			
Noble .....	11	75 00	19 75			
Paulding .....	25	89 00	72 50			
Perry .....	6	39 00	14 00			
Portage .....	12	74 50	32 00			
Preble .....	16	117 00	99 00	47	134 00	121 00
Putnam .....	62	944 00	191 00	18	232 00	86 00
Ross .....	25	128 00	102 00			



TABLE II—HORSES—Continued.

Counties.	Draft Horses, all Classes.			Coach Horses, all Classes.		
	No. of Entries.	Amount Offered.	Amount Awarded.	No. of Entries.	Amount Offered.	Amount Awarded.
Sandusky .....	39	246 00	121 00	14	22 00	22 00
Scioto .....	12	48 00	30 00			
Shelby .....	21	185 00	56 00			
Stark .....	35	294 00	107 00			
Summit .....	23	162 00	58 00	45	137 50	100 50
Trumbull .....	12	64 00	38 00			
Tuscarawas .....	20	144 00	59 00			
Union .....	60	293 00	106 00			
Van Wert .....	47	232 00	186 00	14	116 00	77 00
Warren .....				10	30 00	30 00
Washington .....	1	61 00	6 00			
Wayne .....	34	100 50	64 50			
Wood .....	37	289 00	157 00	10	57 00	38 00
Wyandot .....	10	96 00	33 00			
Totals .....	1,769	\$8,745 65	\$4,914 75	512	\$2,725 45	\$1,432 50

TABLE II — HORSES — Continued.

Counties.	Sweepstakes Where Different Breeds Compete.			Horses, all Other Classes.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams .....				50	\$145 00	\$130 00
Allen .....				29	134 50	98 00
Ashtabula .....				22	72 00	42 00
Athens .....	3	\$20 00	\$20 00	13	115 00	35 00
Auglaize .....	47	51 00	51 00	11	59 00	22 00
Brown .....				71	230 00	222 00
Butler .....	4	15 00	15 00	13	50 00	50 00
Carroll .....				21	41 00	41 00
Champaign .....				19	24 00	19 00
Clark .....	22	137 00	54 00			
Clermont .....				80	142 00	136 00
Columbiana .....	20	48 00	40 00	22	59 00	41 00
Coshocton .....	11	66 00	66 00	7	15 00	15 00
Crawford .....	13	1,610 00	1,312 00	15		
East Cuyahoga .....	8	20 00	8 00			
Darke .....	20	191 00	153 00			
Delaware .....	5	20 00	8 00	28	85 00	53 00
Erie .....		50 00	22 00			
Fairfield .....				59	165 00	155 00
Greene .....	19	60 00	48 00	2	24 00	10 00
Guernsey .....	22	88 00	62 00			
Hamilton .....				70	255 00	245 00
Hancock .....				6	145 00	33 00
Hardin .....	11	96 00	70 00			
Harrison .....	35	48 00	48 00	13	26 00	8 00
Jefferson .....				11	74 00	25 00
Licking .....	17	70 00	60 00	2	33 00	9 00
Madison .....				42	110 00	84 50
Mahoning .....	5	45 00	17 50			
Marion .....	59	123 00	115 00			
Medina .....	3	40 00	20 00	19	30 00	20 00
Mercer .....				17	121 00	44 00
Miami .....	22	115 00	100 00	40	140 00	69 00
Monroe .....				9	39 00	22 00
Montgomery .....	22	139 00	58 00	9	48 00	48 00
Morgan .....				1	22 00	5 00
Morrow .....	32	64 00	60 00			
Muskingum .....	34	34 00	77 50			
Noble .....				2	45 00	15 00
Paulding .....				4	25 00	18 00
Portage .....				9	66 50	25 00
Preble .....	4	15 00	15 00	28	149 00	122 00
Putnam .....	68	231 00	78 00			
Ross .....	16	48 00	48 00	11	60 00	52 00
Sandusky .....	5	32 00	32 00			
Scioto .....	7	10 00	10 00	10	45 00	28 00
Shelby .....	15	46 00	46 00			
Stark .....				4	28 00	9 00
Summit .....				19	98 00	94 00
Tuscarawas .....	1	16 00	8 00	13	56 00	48 00

TABLE II — HORSES — Continued.

Counties.	Sweepstakes Where Different Breeds Compete.			Horses, all Other Classes.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Van Wert .....	31	88 00	96 00	20	150 00	144 00
Warren .....				5	45 00	40 00
Washington .....	2	16 00	16 00	2	28 25	7 00
Wayne .....	14	42 00	21 00	3	14 00	6 00
Wood .....	24	160 00	145 00	42	118 50	78 00
Wyandot .....		16 00		2	22 00	14 00
Totals .....	622	\$3,870 00	\$3,000 00	875	\$3,353 75	\$2,381 50

TABLE II—HORSES AND SHEEP—Continued.

Counties.	Speed Horses.			Fine Wools.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams .....				12	\$54 00	\$36 00
Allen .....	87	\$2,100 00	\$1,649 99	40	78 00	67 50
Ashtabula .....				18	26 00	26 00
Athens .....	41	1,300 00	1,280 00	5	38 00	9 00
Auglaize .....	117	2,100 00	1,748 00	69	136 00	124 00
Belmont .....	36	600 00	425 00	24	38 00	49 50
Brown .....				33	58 00	58 00
Butler .....	55	2,350 00	2,285 00	22	51 00	51 00
Carroll .....	34	1,000 00	704 00	48	82 00	82 00
Champaign .....	112	2,527 00	2,527 00	103	156 00	152 00
Clark .....	65	2,550 00	2,027 50	48	105 00	98 00
Clermont .....	28	470 00	470 00			
Columbiana .....	35	900 00	800 00	4	58 00	10 00
Coshocton .....	89	1,900 00	1,745 00	75	120 00	120 00
Crawford .....	30			36		
East Cuyahoga .....	64	1,000 00	772 50	30	81 00	68 50
West Cuyahoga .....	63	1,350 00	1,011 50	8	28 00	28 00
Darke .....	88	2,025 00	1,650 00	58	126 00	126 00
Delaware .....	26	300 00	203 75	20	44 00	34 00
Erie .....	26	1,340 00	1,292 50	22	53 00	43 00
Fairfield .....	65	2,350 00	2,245 00	50	77 00	73 00
Fulton .....	32	900 00	698 50	50	48 00	47 00
Greene .....	92	1,900 00	1,080 00	46	64 00	64 00
Guernsey .....	16	339 00	295 00	43	92 00	56 00
Hamilton .....	118	2,400 00	2,280 00	118	180 00	167 00
Hancock .....	102	2,250 00	1,758 70	34	104 00	81 00
Hardin .....				10	105 00	33 00
Harrison .....	67	900 00	900 00	55	75 00	67 00
Jefferson .....	30	720 00	600 00	11	68 00	30 00
Lawrence .....	4	120 00				
Licking .....	45	2,200 00	1,510 00	18	117 00	65 00
Logan .....	36	1,600 00	1,099 00	15	50 00	29 50
Lorain .....	120	2,700 00	2,700 00	16	33 20	33 20
Madison .....	77	2,015 00	1,635 00	25	42 50	42 50
Mahoning .....	36	1,300 00	1,190 00	39	62 00	50 00
Marion .....	62	1,400 00	1,200 00	85	126 00	120 00
Medina .....	59	1,000 00	753 25	81	75 00	53 50
Meigs .....	23	531 00	270 00	15	45 00	37 00
Mercer .....	84	2,200 00	1,700 40	14	36 00	33 00
Miami .....	73	2,450 00	1,880 00	12	30 00	30 00
Monroe .....	69	950 00	950 00	39	111 00	93 00
Montgomery .....	85	3,800 00	3,800 00	42	132 00	60 50
Morgan .....	6	500 00	200 00	25	45 00	34 00
Morrow .....	50	1,400 00	1,060 00	34	73 00	60 00
Muskingum .....	38	2,100 00	1,650 00	63	90 00	87 25
Noble .....	9			1	30 00	1 00
Ottawa .....	12	300 00	300 00			
Paulding .....	41	1,045 00	1,017 50	18	27 00	21 75
Perry .....				8	27 00	21 50
Portage .....	39	1,200 00	800 00	2	27 00	4 50
Preble .....	44	1,775 00	1,055 00	.....	38 00	.....

TABLE II — HORSES AND SHEEP — Continued.

Counties.	Speed Horses.			Fine Wools.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Putnam .....	41	1,300 00	1,099 00	92	126 00	123 00
Ross .....	95	2,150 00	2,150 00			
Sandusky .....					49 00	
Scioto .....	8	190 00	190 00	3	26 00	11 00
Shelby .....	27	1,275 00	1,165 00	7	55 50	25 00
Stark .....	36	1,400 00	900 00	26	94 00	92 00
Summit .....	104	2,025 00	2,025 00	24	76 00	48 00
Trumbull .....	40	1,250 00	1,220 00	11	28 00	25 00
Tuscarawas .....	43	1,600 00	1,070 00	22	64 00	58 00
Union .....	45	1,400 00	1,050 00	38	60 00	38 00
Van Wert .....		2,700 00	1,900 00	12	56 00	52 00
Warren .....	95	1,000 00	977 50	17	72 00	24 00
Washington .....				23	42 75	25 00
Wayne .....	41	1,500 00	935 00	6	25 50	17 00
Wood .....				23	40 00	40 00
Wyandot .....				5	50 00	23 00
Totals .....	3,097	\$81,397 00	\$69,900 59	1,953	\$4,226 45	\$3,278 70

TABLE II—SHEEP—Continued.

Counties.	Coarse and Long Wools.			Sweepstakes Where Different Breeds Compete.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams .....	11	\$36 00	\$32 00	.....	.....	.....
Allen .....	44	78 00	58 50	.....	.....	.....
Ashtabula .....	69	182 00	126 00	10	\$24 00	\$24 00
Athens .....	24	67 00	52 00	7	14 00	14 00
Auglaize .....	18	136 00	37 00	7	21 00	14 00
Belmont .....	.....	.....	.....	2	5 00	5 00
Brown .....	41	87 00	87 00	.....	.....	.....
Butler .....	94	255 00	253 00	.....	.....	.....
Carroll .....	29	84 00	82 00	.....	.....	.....
Champaign .....	166	195 00	193 00	.....	.....	.....
Clark .....	165	227 00	211 00	36	50 00	50 00
Clermont .....	56	144 00	138 00	.....	.....	.....
Columbiana .....	44	87 00	67 00	3	10 00	5 00
Coshocton .....	79	205 00	205 00	49	104 00	104 00
Crawford .....	25	191 00	158 00	21	.....	.....
East Cuyahoga .....	54	178 75	97 75	14	7 00	7 00
West Cuyahoga .....	89	88 25	70 25	.....	.....	.....
Darke .....	35	84 00	75 00	8	25 00	25 00
Delaware .....	30	132 00	45 00	8	18 00	15 00
Eric .....	6	107 00	18 00	.....	.....	.....
Fairfield .....	61	85 00	83 00	23	88 00	88 00
Fulton .....	40	58 50	55 00	14	24 00	23 00
Greene .....	122	187 00	156 00	9	15 00	15 00
Guernsey .....	14	56 00	19 00	27	50 00	50 00
Hamilton .....	14	36 00	36 00	.....	.....	.....
Hancock .....	42	152 00	51 00	.....	.....	.....
Hardin .....	8	105 00	27 00	.....	.....	.....
Harrison .....	21	35 00	25 00	5	5 00	5 00
Jefferson .....	12	34 00	30 00	8	56 00	30 00
Lawrence .....	4	27 00	.....	.....	.....	.....
Licking .....	25	156 00	99 00	10	49 50	43 50
Logan .....	53	100 00	80 00	.....	.....	.....
Lorain .....	24	33 20	33 20	.....	.....	.....
Madison .....	56	154 00	146 00	.....	.....	.....
Mahoning .....	31	124 00	80 00	3	15 00	7 50
Marion .....	110	126 00	126 00	86	56 00	56 00
Medina .....	42	130 00	81 50	13	27 00	24 00
Meigs .....	10	45 00	31 00	.....	.....	.....
Mercer .....	74	144 00	130 00	12	15 00	15 00
Miami .....	43	150 00	88 00	12	36 00	24 00
Monroe .....	3	74 00	14 00	7	37 00	22 00
Montgomery .....	36	103 50	70 00	7	24 00	16 00
Morgan .....	3	40 00	6 00	11	12 00	11 00
Morrow .....	30	73 00	60 00	14	36 00	30 00
Muskingum .....	19	90 00	44 50	6	16 00	14 00
Noble .....	1	18 00	1 50	.....	.....	.....
Paulding .....	33	27 00	19 25	.....	.....	.....
Perry .....	11	27 00	26 00	7	10 00	10 00
Portage .....	4	27 00	9 00	.....	.....	.....
Preble .....	77	190 00	115 00	2	.....	.....
Putnam .....	38	84 00	56 00	19	32 00	32 00

TABLE II—SHEEP—Continued.

Counties.	Coarse and Long Wools.			Sweepstakes Where Different Breeds Compete.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Ross .....	13	80 00	39 00	.....	.....	.....
Sandusky .....	47	98 00	98 00	.....	.....	.....
Scioto .....	5	26 00	14 00	3	12 00	8 00
Shelby .....	14	63 00	23 00	.....	.....	.....
Stark .....	64	188 00	135 00	.....	.....	.....
Summit .....	44	153 00	149 00	.....	.....	.....
Trumbull .....	27	56 00	55 00	.....	.....	.....
Tuscarawas .....	29	64 00	54 00	4	10 00	10 00
Union .....	27	44 00	40 00	.....	.....	.....
Van Wert .....	90	224 00	185 00	10	30 00	30 00
Warren .....	.....	25 00	.....	5	8 00	8 00
Washington .....	12	43 75	25 00	11	23 00	20 50
Wayne .....	4	25 50	10 00	.....	.....	.....
Wood .....	31	80 00	67 00	5	15 00	15 00
Wyandot .....	18	50 00	50 00	.....	.....	.....
Totals .....	2,565	\$6,475 45	\$4,747 45	498	\$929 50	\$870 50

TABLE II—SWINE—Continued.

Counties.	Poland Chinas.			Berkshires.		
	No. of Entries.	Amount Offered.	Amount Awarded.	No. of Entries.	Amount Offered.	Amount Awarded.
Adams	25	\$27 00	\$24 00			
Allen	45	52 50	45 00	17	\$52 50	\$32 00
Ashtabula	9	42 00	35 00	14	42 00	33 00
Athens	7	23 00	17 00			
Auglaize	40	60 00	60 00	11	60 00	48 00
Belmont		12 00			12 00	
Brown	34	46 00	45 00	11	46 00	46 00
Butler	38	72 00	67 00	23	72 00	72 00
Carroll	20	42 00	42 00	14	42 00	42 00
Champaign	24	52 00	45 00	21	52 00	50 00
Clark	23	58 00	48 00	22	58 00	54 00
Clermont	24	40 00	37 00	11	40 00	32 00
Columbiana	13	40 00	36 00	18	40 00	38 00
Coshocton	23	56 00	47 00	16	56 00	31 00
Crawford	15			5		
East Cuyahoga	4	31 00	8 00	4	31 00	10 00
West Cuyahoga	16	41 00	33 00	12	41 00	29 50
Darke	32	54 00	54 00	12	54 00	54 00
Delaware	18	40 00	33 00	10	40 00	20 00
Erie	13	28 50	22 50	9	28 50	26 50
Fairfield	37	49 00	46 00	21	49 00	49 00
Fulton	25	30 00	24 00	24	30 00	30 00
Greene	14	32 00	30 00	11	32 00	30 00
Guernsey	13	22 00	17 00			
Hamilton	32	76 00	76 00	27	76 00	76 00
Hancock		40 00			40 00	
Hardin	16	54 00	54 00	7	54 00	35 00
Harrison	14	14 00	12 00	See	Poland	Chinas
Jefferson	8	15 00	12 00	5	15 00	10 00
Lawrence	3	23 00				
Licking	34	60 00	60 00	31	59 00	59 00
Logan	16	52 00	41 00	18	54 00	52 50
Lorain	12	46 80	46 80	8	46 80	35 00
Madison	29	78 00	67 00	24	78 00	78 00
Mahoning	18	42 00	38 00	16	42 00	34 00
Marion	39	48 00	48 00	10	48 00	26 00
Medina	7	33 00	15 00	15	34 50	26 00
Meigs	5	8 00	8 00	4	8 00	8 00
Mercer	56	56 00	56 00	32	56 00	56 00
Miami	45	63 00	63 00	20	63 00	61 00
Monroe	6	34 00	16 00	5	34 00	20 00
Montgomery	15	49 50	37 00	12	49 50	42 00
Morgan	7	20 00	10 00	8	30 00	18 00
Morrow	18	23 00	17 00	12	23 00	18 00
Muskingum	21	60 00	38 00	18	60 00	46 25
Paulding	25	46 50	37 00	25	46 50	42 25
Perry				14	23 25	23 25
Portage		27 00				
Preble	2	60 00	8 00	16	60 00	54 00
Putnam	34	64 00	53 00	13	64 00	38 00
Ross				3	40 00	7 00



TABLE II — SWINE — Continued.

Counties.	Poland Chinas.			Berkshires.		
	No. of Entries.	Amount Offered.	Amount Awarded.	No. of Entries.	Amount Offered.	Amount Awarded.
Sandusky .....	12	60 00	28 00	14	60 00	45 00
Scioto .....	10	32 00	19 00	8	32 00	17 00
Shelby .....	13	36 00	29 00	.....	37 50	.....
Stark .....	16	62 00	33 00	9	62 00	26 00
Summit .....	35	58 50	51 00	29	58 50	52 00
Trumbull .....	6	27 00	17 00	8	27 00	19 00
Tuscarawas .....	13	42 00	34 00	13	42 00	39 00
Union .....	10	40 00	23 00	5	40 00	14 00
Van Wert .....	28	76 00	76 00	29	76 00	76 00
Warren .....	22	60 00	57 00	21	47 00	47 00
Washington .....	3	26 00	6 00	2	28 00	3 00
Wayne .....	7	30 00	18 50	.....	.....	.....
Wood .....	16	56 00	51 00	11	56 00	47 00
Wyandot .....	15	51 00	29 00	.....	.....	.....
Totals .....	1,180	\$2,699 30	\$2,099 80	778	\$2,575 55	\$1,977 25

† Includes Berkshires.

TABLE II—SWINE—Continued.

Counties.	Chester Whites.			Duroc Jerseys.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams .....	11	\$28 00	\$27 00	4	\$27 00	\$11 00
Allen .....	43	52 50	52 50	56	52 50	48 00
Ashtabula .....	1	42 00	5 00	7	42 00	27 00
Athens .....		21 00				
Anglaize .....	21	60 00	46 00	32	60 00	60 00
Belmont .....		12 00				
Brown .....	15	46 00	45 00	15	46 00	45 00
Butler .....	27	72 00	72 00	41	72 00	72 00
Carroll .....	8	42 00	26 00			
Champaign .....	25	52 00	52 00	27	52 00	48 00
Clark .....	70	58 00	58 00	13	58 00	46 00
Clermont .....	21	40 00	40 00	8	40 00	23 00
Columbiana .....	2	40 00	7 00			
Coshocton .....	17	56 00	41 00	26	56 00	50 00
Crawford .....				4	106 00	85 00
East Cuyahoga .....	6	31 00	15 00		31 00	
West Cuyahoga .....	9	41 00	29 00			
Darke .....	37	54 00	54 00	46	54 00	54 00
Delaware .....	14	40 00	29 00	8	40 00	21 00
Erie .....		28 50				
Fairfield .....	23	49 00	49 00			
Fulton .....	26	30 00	28 00	20	30 00	21 00
Greene .....	36	32 00	32 00	18	32 00	32 00
Guernsey .....	11	22 00	20 00			
Hamilton .....	59	76 00	76 00	18	76 00	70 00
Hancock .....		40 00		2	39 00	8 00
Hardin .....	17	54 00	54 00	21	54 00	54 00
Harrison .....	† 6	14 00	6 00	See	Chester	Whites
Jefferson .....	6	15 00	12 00			
Lawrence .....	3	23 00				
Licking .....	23	60 00	57 00	26	60 00	56 00
Logan .....	16	54 00	40 50	20	54 00	45 50
Lorain .....	6	46 80	16 00	4	46 80	12 00
Madison .....	47	78 00	78 00	31	78 00	78 00
Mahoning .....	9	45 00	34 00			
Marion .....	15	48 00	32 00	18	48 00	34 00
Medina .....	9	33 00	16 00			
Meigs .....	6	4 00	4 00			
Mercer .....	32	56 00	56 00	40	56 00	56 00
Miami .....	27	63 00	63 00	17	63 00	52 00
Monroe .....	9	34 00	26 00	2	34 00	8 00
Montgomery .....	15	49 50	43 50			
Morgan .....	6	20 00	10 00			
Morrow .....	10	23 00	12 00			
Muskingum .....	23	60 00	54 00	23	60 00	57 25
Paulding .....	18	46 50	43 00	17	46 50	40 00
Perry .....	12	23 25	21 75			
Portage .....		27 00			27 00	
Preble .....		60 00		12	60 00	45 00
Putnam .....	8	64 00	21 00	34	64 00	62 00

† Includes Duroc Jerseys.

TABLE II — SWINE — Continued.

Counties.	Chester Whites.			Duroc Jerseys.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Ross .....	12	40 00	28 00	.....	.....	.....
Sandusky .....	16	60 00	60 00	.....	60 00	.....
Scioto .....	3	32 00	6 00	2	32 00	4 00
Shelby .....	15	37 50	37 50	.....	37 50	.....
Stark .....	8	62 00	30 00	.....	.....	.....
Summit .....	30	58 50	57 00	.....	.....	.....
Trumbull .....	7	27 00	21 00	.....	.....	.....
Union .....	.....	40 00	.....	19	40 00	37 00
Van Wert .....	22	76 00	72 00	36	76 00	76 00
Warren .....	19	67 00	54 00	16	47 00	37 00
Washington .....	8	26 00	14 00	.....	.....	.....
Wayne .....	8	30 00	24 00	.....	.....	.....
Wood .....	31	56 00	56 00	.....	.....	.....
Wyandot .....	2	51 00	3 00	.....	51 00	.....
Total .....	986	\$2,729 05	\$1,965 75	683	\$2,008 30	\$1,474 75

TABLE II—SWINE—Continued.

Counties.	All Other Breeds.			Sweepstakes where Different Breeds Compete.		
	No. of Entries.	Amount Offered.	Amount Awarded.	No. of Entries.	Amount Offered.	Amount Awarded.
Ashtabula .....	15	\$42 00	\$42 00	1	\$8 00	\$4 00
Athens .....				12	14 00	11 00
Auglaize .....		24 00			10 00	
Belmont .....	124		42 07			
Carroll .....	21	52 00	46 00			
Champaign .....		58 00		24	35 00	30 00
Clark .....				6	20 00	20 00
Coshocton .....				15		
Crawford .....				4	6 00	6 00
East Cuyahoga .....	20	82 00	62 50			
West Cuyahoga .....	16	54 00	54 00	4	50 00	40 00
Darke .....	1			6	9 00	12 00
Delaware .....	8	107 00	25 00			
Erie .....				16	36 00	36 00
Fairfield .....	4	30 00	12 00	16	31 50	31 50
Fulton .....				38	80 00	75 00
Greene .....	8	5 00	5 00	8	12 00	12 00
Guernsey .....	12	84 00	52 00			
Hamilton .....		40 00				
Hancock .....		54 00		3	50 00	50 00
Hardin .....				17	26 00	24 00
Harrison .....				11	40 00	30 00
Jefferson .....				41	80 00	80 00
Licking .....				16	45 00	30 50
Mahoning .....				31	23 00	23 00
Marion .....	14	33 00	20 50	8	16 00	16 00
Medina .....				6	4 00	4 00
Meigs .....	37	112 00	96 00	18	24 00	24 00
Mercer .....		63 00		23	40 00	40 00
Miami .....	4	34 00	16 00			
Monroe .....	15	49 50	47 50	28	60 00	52 00
Montgomery .....				7	10 00	9 00
Morgan .....	9	23 00	15 00	11	24 00	12 00
Morrow .....				13	20 00	16 50
Paulding .....				3	10 00	5 00
Perry .....				2	20 00	11 00
Preble .....	11	193 00	19 00	9	12 00	12 00
Putnam .....	14	40 00	26 00	5	14 00	14 00
Ross .....	2	60 00	6 00	6	17 00	13 00
Sandusky .....				4	8 00	8 00
Scioto .....				6	8 00	8 00
Shelby .....	11	62 00	33 00			
Stark .....	40	58 50	56 50			
Summit .....	11	27 00	19 00			
Trumbull .....						

TABLE II — SWINE — Continued.

Counties.	All Other Breeds.			Sweepstakes where Different Breeds Compete.		
	No. of Entries.	Amount Offered.	Amount Awarded.	No. of Entries.	Amount Offered.	Amount Awarded.
Tuscarawas .....	6	27 00	17 00	3	15 00	10 00
Van Wert .....	18	76 00	68 00	23	30 00	30 00
Warren .....		10 00				
Washington .....	17	43 00	37 00			
Wayne .....				5	10 00	7 00
Wood .....	4	56 00	18 00	7	29 00	29 00
Wyandot .....					15 00	
Totals .....	442	\$1,599 00	\$835 07	456	\$961 50	\$835 50

TABLE II—POULTRY AND MECHANIC ARTS—Continued.

Counties.	Poultry.			Mechanic Arts.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams	99	\$120 00	\$45 00	53	\$44 00	\$32 00
Allen	227	96 50	70 65	45	49 00	41 50
Ashtabula	128	96 00	57 00			
Athens	65	75 00	26 50	10	70 00	19 50
Auglaize	152	101 10	75 75	197		
Belmont	226	163 30	48 45	44	106 50	26 00
Brown	250	131 00	125 00	35	42 00	30 00
Butler	490	140 50	103 25			
Carroll	167	76 25	57 25	20	61 50	35 00
Champaign	340	216 00	109 50	16	66 00	53 00
Clark	329	198 00	156 50			
Clermont	78	34 50	32 25	28	37 50	18 00
Columbiana	270	60 00	55 00	11	33 00	28 00
Coshocton	395	251 60	184 00	51	118 75	76 75
Crawford	274	100 00	70 25	9	95 00	69 00
East Cuyahoga	158	55 10	55 10	136	149 00	82 20
West Cuyahoga	312	91 50	91 50	35		
Darke	604	126 00	100 00	148	146 00	146 00
Delaware	195	99 00	41 00	23	83 50	30 00
Erie	155	61 25	55 00	85	87 50	45 00
Fairfield	249	115 50	92 50			
Fulton	332	191 65	160 05	22	66 50	61 50
Greene	131	70 50	66 30			
Guernsey	42	25 00	22 00	28	†300 00	†138 00
Hamilton	152	94 00	89 00	5	130 00	120 00
Hancock	168	178 50	129 50	10	34 00	34 00
Hardin	34	70 00	41 00	20		
Harrison	47	30 00	15 00	18	48 00	23 00
Jefferson	30	70 00	15 00	39	80 00	40 00
Lawrence	5	32 00				
Licking	208	114 00	89 50		80 75	
Logan	160	68 50	35 00	108	70 00	60 00
Lorain	115	120 00	108 00	116	160 00	48 00
Madison	242	151 50	136 00			
Mahoning	213	172 50	126 00	32	65 75	22 75
Marion	192	95 00	77 00	156	181 00	170 00
Medina	67		30 75	23	27 50	15 00
Meigs				64	54 00	28 00
Mercer	308	150 00	150 00	24	40 00	36 00
Miami	195	183 00	116 00	119	50 00	50 00
Monroe	55	50 00	25 00	110	25 00	10 00
Montgomery	861	320 75	228 50	6	75 00	60 00
Morgan	15	60 00	5 25	9	72 00	11 50
Morrow	100	137 00	40 00			
Muskingum	652	214 20	182 71	20	181 50	49 50
Noble	34	105 00	25 00	25	126 10	33 00
Ottawa	6	3 75	2 00	15	30 00	18 98
Paulding	241	69 25	55 54	25	109 50	31 16
Perry	103	71 20	44 75			
Portage	46	213 00	26 70	20	81 40	31 50

† Includes all the following classes.

TABLE II—POULTRY AND MECHANIC ARTS—Continued.

Counties.	Poultry.			Mechanic Arts.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Preble .....	162	96 00	74 75	39	120 00	90 00
Putnam .....	368	193 80	118 83	100	142 00	94 00
Ross .....	74	94 00	79 00	51	195 00	142 00
Sandusky .....	760	557 00	388 00	57	214 00	140 00
Scioto .....	43	94 00	26 00	7	60 00	7 00
Shelby .....	121	161 70	72 25	.....	24 50	.....
Stark .....	392	300 00	186 95	100	88 00	20 00
Summit .....	594	340 50	252 00	131	72 50	23 50
Trumbull .....	162	45 00	31 75	.....	.....	.....
Tuscarawas .....	544	223 40	136 90	47	111 50	29 50
Union .....	575	307 00	302 00	105	40 00	40 00
Van Wert .....	339	.....	390 00	98	.....	60 00
Warren .....	226	152 00	134 58	32	75 00	43 50
Washington .....	10	98 75	6 25	36	212 25	31 75
Wayne .....	107	95 70	45 20	260	.....	.....
Wood .....	156	120 00	73 50	37	.....	.....
Wyandot .....	227	240 00	167 80	6	95 00	23 00
Totals .....	14,777	\$8,587 25	\$6,178 76	3,066	\$4,725 00	\$2,568 09

TABLE II—FARM PRODUCTS, FRUITS AND FLOWERS—Continued.

Counties.	Farm Products.			Fruits and Flowers.		
	No. of Entries.	Amount Offered.	Amount Awarded.	No. of Entries.	Amount Offered.	Amount Awarded.
Adams .....	310	\$93 00	\$76 00	1401	\$87 00	\$71 00
Allen .....	335	107 85	89 15	144	85 50	46 65
Ashtabula .....	304	94 50	86 75	1178	104 25	56 55
Athens .....	88	74 00	23 00	365	133 00	103 50
Auglaize .....	702	80 00	79 56	1396	58 00	58 00
Belmont .....	68	42 25	23 25	47	49 50	25 00
Brown .....	600	100 00	90 00	11,100	170 00	155 00
Butler .....	495	135 50	130 00			
Carroll .....	240	79 50	71 75	226	56 75	52 75
Champaign .....	525	146 00	130 25	642	165 00	116 25
Clark .....	369	447 75	202 00	473	408 00	278 00
Clermont .....	430	69 75	61 50	1,285	284 35	234 85
Columbiana .....	590	91 50	91 00	682	152 00	144 00
Coshocton .....	241	148 00	135 00	201	85 75	61 00
Crawford .....	251	101 00	40 00	182	138 00	42 00
East Cuyahoga .....	*426	178 65	144 10			
West Cuyahoga .....	467	104 35	76 45	251	77 90	43 90
Darke .....	263	228 50	228 50	425	105 00	105 00
Delaware .....	136	72 25	39 50	111	99 00	39 50
Erie .....	202	83 75	67 50	297	178 95	116 30
Fairfield .....	210	138 50	92 50	368	243 50	210 75
Fulton .....	375	86 40	84 30	412	145 60	88 25
Greene .....	622	220 00	102 00	121	78 25	45 20
Guernsey .....	815			1717		
Hamilton .....	295	145 00	142 00	170	240 50	209 50
Hancock .....	5	179 00	31 75	1122	60 00	27 50
Hardin .....	110	215 00	185 50	45	80 00	65 00
Harrison .....	170	35 00	30 00	1347	57 00	50 00
Jefferson .....	223	90 00	65 00	150	62 00	40 00
Lawrence .....	22	30 00		74	38 00	
Licking .....	727	191 00	185 00	507	216 50	161 00
Logan .....	409	50 00	55 00	132	142 00	92 50
Lorain .....	96	50 00	50 00	136	18 00	16 00
Madison .....	146	144 50	92 60	182	100 00	66 25
Mahoning .....	352	161 00	90 20	423	129 70	113 45
Marion .....	580	110 00	127 00	451	160 00	147 00
Medina .....	282	51 45	41 15	313	33 25	38 75
Meigs .....	10	18 00	15 00	1151	36 00	15 00
Mercer .....	300	240 00	152 00	350	204 00	183 00
Miami .....	373	165 00	155 00	621	198 00	177 00
Monroe .....	250	100 00	25 00	1300	75 00	25 00
Montgomery .....	273	758 00	323 00	223	373 60	280 25
Morgan .....	162	55 00	35 00	152	55 00	18 50
Morrow .....	600	85 00	60 00	390	60 00	28 00
Muskingum .....	288	157 40	119 88	241	300 90	161 55
Noble .....				1139	150 00	62 75
Ottawa .....	88		30 00	60		25 00
Paulding .....	173	100 50	38 78	1446	90 70	46 04

\*Includes fruits and flowers.

†Includes canned fruits, pickles, jellies, etc.



TABLE II—FARM PRODUCTS, FRUITS AND FLOWERS—Continued.

Counties.	Farm Products.			Fruits and Flowers.		
	No. of Entries.	Amount Offered.	Amount Awarded.	No. of Entries.	Amount Offered.	Amount Awarded.
Perry .....	25	62 85	13 60	172	51 40	19 95
Portage .....	164	111 10	43 00	153	125 40	59 50
Preble .....	494	243 00	.....	261	90 00	166 00
Putnam .....	624	173 00	93 00	164	97 00	60 00
Ross .....	158	99 00	76 00	286	206 00	155 00
Sandusky .....	252	74 00	70 00	240	102 00	83 00
Scioto .....	187	98 00	74 65	196	84 00	65 46
Shelby .....	158	67 75	38 50	120	74 70	40 25
Stark .....	346	190 00	135 00	600	343 00	224 00
Summit .....	1,045	173 25	206 10	676	230 70	215 10
Trumbull .....	108	66 00	36 00	241	106 50	75 75
Tuscarawas .....	96	88 35	45 20	219	89 70	49 90
Union .....	525	186 65	186 65	325	55 65	55 65
Van Wert .....	1,276	.....	392 00	726	.....	145 00
Warren .....	176	81 00	58 50	321	90 00	82 00
Washington .....	23	177 00	6 70	50	50 65	13 50
Wayne .....	117	69 00	35 80	80	62 25	46 65
Wood .....	773	334 50	301 00	580	152 50	133 75
Wyandot .....	150	116 50	69 30	14	54 75	20 00
Totals .....	21,895	\$8,464 80	\$6,093 32	20,373	\$7,851 65	\$5,752 95

‡ Includes canned fruits, pickles, jellies, etc.

TABLE II—CANNED FRUITS, ETC.—FINE ARTS—Continued.

Counties.	Canned Fruits, Pickles, Jellies, Etc.			Fine Arts.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams .....				51	\$31.00	\$23 00
Allen .....	486	\$75 75	\$35 15	174	129 50	97 70
Ashtabula .....				136	114 00	109 78
Athens .....	50	20 00	19 00	25	36 00	22 00
Auglaize .....				676	78 00	78 00
Belmont .....	130	30 00	22 50	13	16 00	4 00
Brown .....				31	13 00	12 00
Butler .....	281	69 50	64 50	392	166 00	166 00
Carroll .....	190	31 25	25 25	36	17 00	14 00
Champaign .....	351	70 50	64 75	183	70 00	68 00
Clark .....	481	150 00	133 00	268	282 75	210 00
Clermont .....				79	62 25	50 75
Columbiana .....	335	43 50	42 00	46	23 00	19 00
Coshocton .....	166	52 50	50 75	229	224 00	191 00
Crawford .....	135	98 00	28 00	148	150 00	103 70
East Cuyahoga .....	111	54 25	40 00	81	65 25	49 75
West Cuyahoga .....	47	25 45	9 40	25	19 80	10 65
Darke .....	291	81 00	81 00	277	108 00	105 00
Delaware .....	111	39 75	30 25	37	35 50	26 50
Erie .....	103	15 75	13 00	115	165 50	57 50
Fairfield .....	148	61 50	54 00	566	356 50	333 50
Fulton .....	499	63 90	51 00	101	162 25	77 50
Greene .....	141	90 00	47 75	186	175 00	127 10
Guernsey .....				190	See Mechanic Arts.	
Hamilton .....	277	67 50	67 25	316	165 25	149 75
Hancock .....				286	250 00	103 25
Hardin .....	84	165 00	82 50	34	80 00	63 50
Harrison .....				21	30 00	10 00
Jefferson .....	356	82 00	65 00	100	45 00	43 00
Lawrence .....	20	38 30		15	25 50	[Etc.
Licking .....	407	*536 75	*507 25	160	See Canned fruits,	
Logan .....	1,010	225 00	203 90	428	1475 00	286 65
Lorain .....				8	60 00	60 00
Madison .....	191	85 75	71 25	25	54 00	24 50
Mahoning .....	186	38 00	30 30	158	110 00	100 00
Marion .....	181	70 00	66 00	128	51 00	50 00
Medina .....	200		24 75	111	88 00	69 85
Meigs .....				10	50 00	25 00
Mercer .....	338	66 00	58 00	88	96 00	70 00
Miami .....	351	81 00	76 00	281	216 00	211 00
Monroe .....				175	125 00	33 00
Montgomery .....	316	73 00	51 50	348	227 00	212 00
Morgan .....	92	50 00	30 00	85	35 00	29 00
Morrow .....	825	65 00	45 00	200	75 00	50 00
Muskingum .....	76	22 50	20 77	55	144 00	76 25
Ottawa .....	17		10 00	7		8 00
Paulding .....				1307	271 35	104 24
Perry .....		16 25				

\* Includes Fine Arts and Textile Fabrics.

† Includes Textile Fabrics.

TABLE II—CANNED FRUITS, ETC.—FINE ARTS—Continued.

Counties.	Canned Fruits, Pickles, Jellies, Etc.			Fine Arts.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Portage .....	105	33 00	21 20	8	44 00	7 00
Preble .....	309	32 00	98 25	450	120 00	115 00
Putnam .....	900	93 00	64 00	1,944	956 00	670 00
Ross .....	24	17 00	15 00	93	100 00	90 00
Sandusky .....	580	51 00	49 00	100	90 00	46 00
Scioto .....	104	43 00	34 25	36	44 00	8 90
Shelby .....	118	46 50	19 00	114	80 00	57 25
Stark .....	447	100 00	88 75	134	205 00	210 00
Summit .....	367	79 00	58 75	396	205 25	154 00
Trumbull .....	181	36 00	29 25	50	46 75	28 25
Tuscarawas .....	70	18 50	11 00	66	86 00	43 00
Union .....	200	46 40	46 40	85	70 00	52 50
Van Wert .....	559			387		225 00
Warren .....	252	30 50	29 50	163	66 50	52 50
Washington .....	20	72 70	9 90	44	109 25	19 50
Wayne .....	92	30 50	26 70	73	56 75	46 50
Wood .....	479	49 25	48 00	236	193 25	159 25
Wyandot .....	95	24 50	24 50	19	23 25	11 75
Total .....	13,885	\$3,557 50	\$2,944 22	11,809	\$7,729 40	\$5,726 82

TABLE II—TEXTILE FABRICS—Continued.

Counties.	Textile Fabrics.		
	Number of Entries.	Amount Offered.	Amount Awarded.
Adams .....	454	\$146 00	\$121 00
Allen .....	357	205 50	113 00
Ashtabula .....	343	149 20	119 20
Athens .....	135	53 00	33 75
Auglaize .....	1,002	220 00	218 00
Belmont .....	72	50 00	18 00
Brown .....	300	90 00	57 50
Butler .....	825	184 50	103 25
Carroll .....	398	78 50	77 00
Champaign .....	331	122 00	94 75
Clark .....	310	180 50	137 38
Clermont .....	319	157 50	86 50
Columbiana .....	160	83 75	77 00
Coshocton .....	371	130 00	126 00
Crawford .....	344	147 00	60 50
East Cuyahoga .....	326	114 25	77 75
West Cuyahoga .....	190	75 10	50 45
Darke .....	956	440 00	392 50
Delaware .....	220	128 25	110 50
Erie .....	313	305 00	88 50
Fairfield .....	106	77 00	63 00
Fulton .....	888	269 20	177 25
Greene .....	642	155 75	117 50
Guernsey .....	600	.....	.....
Hamilton .....	334	135 25	132 25
Hancock .....	98	75 00	67 50
Hardin .....	62	150 00	74 50
Harrison .....	320	50 00	49 00
Jefferson .....	270	130 00	85 00
Lawrence .....	55	32 90	.....
Licking .....	149	.....	.....
Logan .....	981	.....	406 33
Lorain .....	76	90 00	90 00
Madison .....	163	156 50	70 25
Mahoning .....	157	86 00	34 00
Marion .....	330	77 00	70 00
Medina .....	356	159 19	108 35
Meigs .....	46	25 00	12 00
Mercer .....	445	210 00	203 00
Miami .....	885	327 00	290 00
Monroe .....	275	175 00	20 10
Montgomery .....	511	269 00	263 45
Morgan .....	119	74 00	37 75
Morrow .....	1,100	200 00	175 00
Muskingum .....	34	73 75	22 25
Noble .....	31	135 00	14 50
Ottawa .....	154	.....	50 00
Paulding (see fine arts) .....	.....	.....	.....
Perry .....	4	32 85	2 65
Portage .....	131	100 65	38 20
Preble .....	696	150 00	204 00

TABLE II — TEXTILE FABRICS — Concluded.

Counties.	Textile Fabrics.		
	Number of Entries.	Amount Offered.	Amount Awarded.
Putnam .....	980	344 00	265 00
Ross .....	426	301 00	215 00
Sandusky .....	620	206 00	152 00
Scioto .....	80	81 00	46 10
Shelby .....	254	116 00	78 00
Stark .....	437	220 00	152 35
Summit .....	348	118 40	72 20
Trumbull .....			48 75
Tuscarawas .....	61	118 50	83 00
Union .....	310	106 55	102 85
Van Wert .....	651		312 00
Warren .....	623	150 00	135 00
Washington .....	271	147 35	70 90
Wayne .....	351	212 60	171 35
Wood .....	669	227 25	218 50
Wyandot .....	113	80 50	34 75
Totals .....	23,938	\$8,901 24	\$7,198 11

TABLE III — PROPERTY, RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1899.

Counties.	Number of acres in Fair Grounds.	Grounds owned by the Society or leased.	If owned, cash value of real estate and improvements thereon.	Amount of indebtedness, if any, over and above cash on hand.	Number of members.	Amount received from gate admissions.	Amount received from entry fees.	Amount received from booth rents and privilege permits.	Amount received from other sources.	Amount paid in premiums.	Amount paid for real estate, buildings and permanent improvements.	Amount paid for other than premiums.
Adams .....	16½	owned	\$6,000 00	\$1,000 00	197	\$1,609 95	\$119 00	\$119 70	\$638 98	\$1,199 00	\$286 85	\$880 54
Allen .....	30	owned	15,000 00	5,855 00	446	3,107 75	518 20	485 24	400 00	3,092 29	236 18	2,128 08
Ashtabula .....	15	owned	7,000 00	3,835 26	196	986 00	24 00	190 50	779 06	1,246 48	210 00	1,878 21
Athens .....	32	owned	15,000 00	8,300 00	122	1,750 42	698 65	276 00	878 55	1,946 25	.....	1,432 79
Auglaize .....	40	owned	10,000 00	5,319 19	14	2,309 10	597 55	1,063 87	569 35	3,198 81	314 42	1,877 95
Belmont .....	18	owned	1,200 00	300 00	.....	583 65	90 23	44 10	1,051 13	588 45	.....	1,492 52
Brown .....	20	owned	4,000 00	.....	618	2,521 40	88 50	314 75	1,272 67	1,525 50	1,059 65	1,235 47
Butler .....	55	owned	45,000 00	18,167 87	2,025	6,015 50	662 50	1,673 54	22,911 70	4,637 00	.....	24,794 11
Carroll .....	26	owned	8,000 00	3,800 00	14	1,500 45	480 15	276 40	2,637 13	1,753 07	2,000 00	1,128 44
Champaign .....	50	owned	15,000 00	.....	75	3,673 61	1,345 75	768 50	868 86	4,239 94	884 96	1,440 77
Clark .....	46	owned	.....	780 00	22	2,146 86	1,125 10	1,280 75	3,557 55	4,627 38	960 50	3,312 88
Clermont .....	24	owned	10,000 00	800 00	900	1,985 65	175 00	460 00	564 23	1,375 85	284 07	691 98
Columbiana .....	23	owned	12,000 00	3,250 00	592	2,743 00	457 50	431 00	190 66	1,762 25	.....	227 25
Coshocton .....	33	owned	20,000 00	1,750 00	16	5,407 00	1,008 38	754 00	867 83	4,411 50	963 85	2,148 45
Crawford .....	30	owned	.....	65 53	175	2,106 50	554 20	387 50	121 98	2,142 45	.....	1,068 46
East Cuyahoga .....	30	owned	10,000 00	.....	569	2,097 10	298 93	243 10	1,704 50	1,675 65	1,904 50	672 98
West Cuyahoga .....	23	owned	.....	1,300 00	396	843 75	459 25	367 50	2,070 31	1,975 85	235 68	1,570 53
Darke .....	44½	owned	25,000 00	6,344 60	2,470	6,828 40	734 25	1,383 85	1,021 89	4,910 50	590 00	3,946 59
Delaware .....	40	leased	.....	.....	127	779 00	86 95	101 50	169 57	593 00	.....	518 40

TABLE III — PROPERTY, RECEIPTS, DISBURSEMENTS, ETC.— Continued.

Counties.	Number of acres in Fair Grounds.	Grounds owned by the Society or leased.	If owned, cash value of real estate and improvements thereon.	Amount of indebtedness if any, over and above cash on hand.	Number of members.	Amount received from gate admissions.	Amount received from entry fees.	Amount received from booth rentals and privilege permits.	Amount received from other sources.	Amount paid in premiums.	Amount paid for real estate, buildings and permanent improvements.	Amount paid for current expenses other than premiums.
Erie .....	41	owned	30,000 00	.....	.....	1,435 18	519 75	424 35	1,658 40	825 95	53 50	2,480 61
Fairfield .....	69	owned	75,000 00	15,000 00	398	5,073 00	1,543 30	1,032 00	2,000 00	4,276 00	500 00	4,872 30
Fulton .....	40	owned	6,500 00	.....	260	2,554 25	277 70	477 35	393 49	2,201 70	81 71	1,200 10
Geauga .....	22	owned	10,000 00	800 00	723	2,236 00	339 00	573 00	1,639 00	1,919 00	343 00	2,300 00
Greene .....	39	leased	.....	.....	360	3,205 75	743 80	631 00	637 00	2,684 85	979 40	1,203 95
Guernsey .....	20	owned	5,000 00	.....	40	1,141 30	407 25	100 00	937 34	1,108 00	.....	677 25
Hamilton .....	57	owned	25,000 00	.....	584	5,930 00	1,378 00	2,030 84	2,472 66	5,361 25	1,627 11	4,331 36
Hancock .....	70	owned	13,000 00	400 00	300	2,069 25	848 75	511 35	2,311 50	2,594 79	1,336 67	1,400 06
Hardin .....	45½	owned	6,000 00	4,900 00	15	1,481 75	111 00	228 50	445 20	.....	54 50	2,221 95
Harrison .....	40	leased	.....	.....	.....	1,842 00	217 00	148 00	257 00	1,450 00	.....	996 00
Jefferson .....	12	leased	.....	1,375 00	431	996 00	500 00	208 34	981 49	1,510 00	1,573 00	303 73
Lawrence .....	10	leased	.....	180 00	64	274 10	70 95	4 50	68 84	220 68	.....	160 76
Licking .....	80	owned	75,000 00	9,891 16	12	3,511 30	749 50	490 64	1,103 67	3,619 25	211 02	2,083 01
Logan .....	25	owned	9,000 00	3,400 00	3,513	3,384 90	417 00	1,350 00	648 00	2,159 35	175 00	3,386 94
Lorain .....	28	owned	45,000 00	4,000 00	265	4,154 55	1,619 44	671 75	1,218 38	1,337 13	1,294 45	5,001 19
Madison .....	47	leased	.....	113 37	610	2,974 10	1,041 13	546 75	444 57	3,203 85	.....	1,811 07
Mahoning .....	40	owned	4,000 00	2,300 00	10	3,086 75	460 05	799 25	2,433 08	2,471 70	300 00	3,892 79
Marion .....	47	owned	15,000 00	.....	140	2,701 75	473 37	650 00	595 00	3,121 00	.....	7,229 13
Medins .....	25½	owned	8,000 00	757 71	1,000	2,064 40	270 65	364 90	217 42	1,623 00	475 40	1,415 68

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Meigs .....	72	owned	15,000 00	13,000 00	19	1,561 26	157 00	73 00	822 00	725 00	900 00	1,506 00
Mercer .....	40	owned	30,000 00	500 00	15	3,529 00	645 00	1,018 00	3,049 11	3,767 96	502 99	3,931 81
Miami .....	51	owned	25,000 00	.....	24	4,974 25	1,008 10	1,122 55	1,732 47	4,532 00	1,437 10	2,363 10
Monroe .....	15%	owned	6,000 00	1,500 00	138	1,826 43	541 50	210 50	1,151 75	1,510 10	587 99	1,006 00
Montgomery .....	42	owned	.....	.....	22	7,846 95	1,731 25	1,702 00	805 50	6,256 30	.....	2,233 77
Morgan .....	20	owned	6,000 00	3,100 00	125	726 34	82 50	92 00	1,126 91	623 00	949 84	594 49
Morrow .....	45	owned	6,000 00	.....	300	2,863 60	832 95	466 33	237 69	2,071 60	.....	1,560 21
Muskingum .....	43	owned	20,000 00	10,600 00	198	3,165 47	1,014 76	507 60	1,443 91	2,553 17	201 03	3,082 63
Noble .....	8	owned	2,000 00	.....	.....	432 25	141 00	*318 14	.....	272 50	1633 35	.....
Ottawa .....	10	leased	.....	.....	70	246 20	125 00	37 00	.....	445 96	20 00	300 63
Paulding .....	25	owned	2,500 00	500 00	430	1,405 50	597 50	436 70	523 29	1,753 70	503 56	690 70
Perry .....	25	leased	.....	375 00	57	896 00	54 26	447 55	422 75	233 50	31 10	1,615 96
Portage .....	22%	owned	10,000 00	6,000 00	456	1,033 70	402 35	326 00	454 52	1,307 10	97 84	811 63
Preble .....	39	owned	12,000 00	.....	13	4,432 00	343 00	750 00	1,214 00	2,361 00	500 00	2,069 30
Putnam .....	40	owned	25,000 00	900 61	197	4,601 15	425 50	1,503 15	905 06	4,125 38	993 36	3,339 62
Ross .....	36	leased	.....	.....	253	4,396 16	12,361 23	.....	394 54	3,555 00	.....	3,496 99
Sandusky .....	35	owned	8,500 00	2,500 00	1,450	3,630 00	333 50	416 00	498 50	2,968 00	247 43	1,127 33
Scioto .....	20	leased	.....	250 00	38	844 23	96 10	323 23	24 30	632 36	650 00	100 45
Shelby .....	43	owned	18,000 00	10,000 00	125	2,031 15	463 05	232 65	333 42	1,302 75	.....	963 24
Stark .....	53	owned	45,000 00	.....	271	2,319 05	602 10	725 95	3,421 80	2,354 05	1,227 31	2,363 33
Summit .....	47	owned	50,000 00	19,000 00	350	6,056 47	1,622 30	1,136 00	4,335 14	4,139 70	1,931 39	6,384 20
Trumbull .....	36	owned	20,000 00	9,134 03	427	1,739 00	472 50	533 79	532 95	1,395 75	.....	1,145 52
Tuscarawas .....	37½	owned	32,000 00	8,000 00	10	1,544 50	514 50	631 45	1,812 72	2,005 50	453 66	1,901 81
Union .....	49	owned	12,000 00	1,800 00	1,200	2,727 00	263 17	1,200 00	223 60	2,335 05	983 70	1,080 02

\* Includes all other sources.

† Includes booth rents, etc.

‡ Includes all expenses other than premiums and real estate.



TABLE III — PROPERTY, RECEIPTS, DISBURSEMENTS, ETC. — Concluded.

Counties.	Number of acres in Fair Grounds.	Grounds owned by the Society or leased.	If owned, cash value of real estate and improvements thereon.	Amount of indebtedness, if any, over and above cash on hand.	Number of members.	Amount received from gate admissions.	Amount received from entry fees.	Amount received from booth rents and privilege permits.	Amount received from other sources.	Amount paid in premiums.	Amount paid for real estate, buildings and permanent improvements.	Amount paid for current expenses other than premiums.
Van Wert .....	46	owned	15,000 00	2,200 00	2,350	4,550 90	844 85	1,291 00	1,893 24	4,921 75	1,068 51	2,406 31
Warren .....	33	leased	.....	500 00	1,800	2,599 75	721 15	806 25	264 68	2,357 08	.....	1,893 86
Washington .....	17	owned	15,000 00	4,000 00	484	2,340 70	1,017 50	774 50	484 00	523 65	155 00	3,983 05
Wayne .....	39	owned	8,000 00	65 96	136	1,332 68	462 57	210 00	720 48	1,666 20	232 61	837 47
Wood .....	57	leased	.....	.....	234	4,989 05	1,272 30	1,404 50	1,084 68	5,063 00	1,444 92	2,197 83
Wyandot .....	32	leased	.....	.....	286	1,041 75	66 22	136 25	179 40	390 10	.....	1,041 48
Totals .....	2,430	.....	\$912,700 00	\$199,040 29	29,179	\$181,872 91	\$40,406 86	\$41,812 45	\$91,800 88	\$161,208 33	\$35,043 53	\$149,614 06

OFFICIAL REPORT OF THE SECRETARY  
OF THE  
OHIO STATE BOARD OF AGRICULTURE  
ON  
COMMERCIAL FERTILIZERS.

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COLUMBUS OHIO, December 31, 1899.

*To the Manufacturers, Dealers and Consumers of Commercial Fertilizers:*

Agreeable to the requirement of the Fertilizer Law of Ohio, I herewith present "a correct report of all analyses" of commercial fertilizers made by the State Chemist, "and certificates filed" by the manufacturers or general agents, guaranteeing ingredients, for the year 1899.

The following tables of analyses and valuations of commercial fertilizers include all brands that have been properly licensed to sell in the state that have been found on the markets by the Deputy Inspectors of fertilizers. An additional table will be found giving a list of brands which have been properly licensed, but not found on the markets. If other brands have been sold in this state they have not been found by my Deputies.

All licenses expire December 31, 1899, and no commercial fertilizers can be legally sold or offered for sale in the state after this date until fees are paid and licenses secured by the manufacturers or agents, for the year ending December 31, 1900; so the agent who purposes handling, selling, or dealing in commercial fertilizers in 1900, will do well to see that the manufacturer has paid license on each and every brand he offers for sale, for if the manufacturer fails to do this, the "importer or party who causes it to be sold or offered for sale within the State of Ohio," will be held for the same or subjected to the payment of the fines and penalties prescribed in sections 4446f and 7002 of the Revised Statutes. To avoid all possibility of trouble, the agent handling commercial fertilizers should see that the manufacturer has complied with the law before goods are offered for sale. Whether or not this has been done can be learned from the manufacturer, or from the Secretary of the State Board of Agriculture, Columbus, Ohio.

All dealers in and purchasers of commercial fertilizers are interested in seeing that the fertilizer law is enforced. If they know of any brands

offered for sale during 1899, not appearing in the following lists, they will confer a favor by notifying the Secretary. In a few cases goods are shipped into the state by parties who are ignorant of the law, and who will promptly comply with its requirements as soon as they receive the necessary information.

By the coöperation of farmers using commercial fertilizers, and of manufacturers and agents who comply with the requirements of the law, I feel confident that but few persons will be able to evade the law, and these only for a short time. The penalties prescribed by law and the injury to the reputation of the manufacturer who seeks to evade it are so great that he cannot afford to neglect to comply with its reasonable requirements.

Manufacturers intending to place their goods on sale in Ohio should send to the Secretary for blanks on which to make formal application for license and claims for fertilizers.

Manufacturers when applying for licenses will facilitate the work of sampling their goods by sending to the Secretary lists of their agents and stating where goods may be found.

#### SAMPLES SENT BY MANUFACTURERS.

To comply with the law, manufacturers should always send samples of commercial fertilizers to the Secretary of the State Board of Agriculture, when making application for license, that they may be used in comparison with those drawn on the markets for analysis.

#### ADVANCE REPORTS.

It is my custom to send advance reports to manufacturers to give them an opportunity to check the Chemist's work before the results are published in the annual report, in order to insure accuracy. The analyses reported will be published, unless some errors are shown. It is not sufficient to claim the analyses are wrong because they show lower percentages than the manufacturers claim; this is not proof or evidence of error. The object of sending these advance reports is to enable me to eliminate errors should they exist. Where there are doubts about the findings I will have samples retested and will, if requested, cause parts of the samples in question to be sent to any member of the Association of Official Agricultural Chemists, of which Prof. Harvey W. Wiley, of Washington, D. C., is Secretary; but the manufacturers making such requests must pay the official chemists they select for making reanalyses.

#### REGULAR ANALYSES.

The work of sampling and analyzing fertilizers is done in accordance with the fertilizer law of the state, and under this law the Official Chemist analyzes such samples as are furnished him by the Secretary of the State Board of Agriculture.

Samples are drawn from the open markets of the state and from stocks purchased by consumers of commercial fertilizers by my duly authorized Deputy Inspectors, F. A. Derthick, Ed. Loewer, and R. H. Ramsdell. Great care is taken in this work and samples are drawn from every brand that can be found in the state by diligent search and inquiry, covering a period from the latter part of March until the early part of December. It is regretted that samples of all licensed goods could not be found for analysis, but until manufacturers and dealers give more care to the matter of informing me where goods can be found, perfect results cannot be obtained. With the information possessed by the Secretary and his Deputy Inspectors the field has been worked diligently and faithfully.

#### SPECIAL ANALYSES.

I frequently have requests from farmers and agents to make special analyses of samples of commercial fertilizers. I am obliged to say that the law does not provide for these, and I have no fund for paying for the work involved. If it will be an accommodation, I will have special analyses made by the Official Chemist of such samples as may be sent me with the proper fees, as follows: "Phosphates" and "Superphosphates": Ammonia, five dollars (\$5); total phosphoric acid, five dollars (\$5); insoluble phosphoric acid, five dollars (\$5); potash, five dollars (\$5); or a total of twenty dollars (\$20) if all three ingredients are claimed. "Bones" and "Tankages": Ammonia, five dollars (\$5); total phosphoric acid, five dollars (\$5); potash, five dollars (\$5); or a total of fifteen dollars (\$15) if all three ingredients are claimed; or, in other words, five dollars (\$5) for each and every determination.

In selecting a sample for analysis great care should be taken to secure a fair average of the goods from which the sample is drawn. A small quantity should be taken from five to eight different parts—top, bottom, center, sides, etc.—of each of several packages of fertilizers, and all these small parcels should be carefully and thoroughly mixed together; then from this take from one-half pint to a pint and put into an air-tight package—glass or tin—and send by express or mail, charges prepaid.

#### VALUATIONS OF COMMERCIAL FERTILIZERS.

Great care has been given to the subject of valuations, and the figures given in the following tables are the results of a careful and painstaking study of the market quotations of fertilizer ingredients and the cost of mixing and placing on the markets of the state well prepared commercial fertilizers.

Of course, it is impossible in any system of commercial valuations to fix absolutely exact prices at which goods are or can be sold, uniformly and under all circumstances and conditions. The two objects sought, however, are, first—to give a uniform scale for commercial comparison;

and, second—to give, as nearly as possible, a reasonably correct average price at which the farmer should have been able to buy good fertilizers in 1899.

It is always necessary to bear in mind that the values given to these fertilizers are intended to express their *commercial values*, that is, the cost at which the materials should be put together and sold at a fair profit; and are not necessarily indicative in any way of their *agricultural values*, which, of course, depend on the nature of the soils on which they are used and the needs of the crops grown.

### VALUES FOR 1899.

TABLE NO. 1.—MIXED FERTILIZERS, WITH POTASH.

Ammonia,  $12\frac{1}{2}$  cents per pound or \$2.50 per unit.

Available phosphoric acid,  $5\frac{1}{2}$  cents per pound or \$1.10 per unit.

Insoluble phosphoric acid, in *bone*,  $3\frac{1}{4}$  cents per pound or 65 cents per unit.

Insoluble phosphoric acid, in mixed animal and mineral,  $1\frac{1}{2}$  cents per pound or 30 cents per unit.

Potash (actual) from sulphate,  $5\frac{3}{4}$  cents per pound or \$1.15 per unit.

Potash (actual) from muriate,  $5\frac{1}{4}$  cents per pound or \$1.05 per unit.

TABLE NO. 2.—MIXED FERTILIZERS, WITHOUT POTASH.

Ammonia,  $12\frac{1}{2}$  cents per pound or \$2.50 per unit.

Available phosphoric acid,  $5\frac{1}{2}$  cents per pound or \$1.10 per unit.

Insoluble phosphoric acid, in *bone*,  $3\frac{1}{4}$  cents per pound or 65 cents per unit.

Insoluble phosphoric acid, in mixed animal and mineral,  $1\frac{1}{2}$  cents per pound or 30 cents per unit.

TABLE NO. 3.—DISSOLVED BONE.

Ammonia,  $12\frac{1}{2}$  cents per pound or \$2.50 per unit.

Available phosphoric acid,  $5\frac{1}{2}$  cents per pound or \$1.10 per unit.

Insoluble phosphoric acid,  $3\frac{1}{4}$  cents per pound or 65 cents per unit.

TABLE NO. 4.—ROCK PHOSPHATE.

Available phosphoric acid,  $5\frac{1}{2}$  cents per pound or \$1.10 per unit.

TABLE NO. 5.—ROCK PHOSPHATE AND POTASH.

Available phosphoric acid,  $5\frac{1}{2}$  cents per pound or \$1.10 per unit.

Potash (actual) from sulphate,  $5\frac{3}{4}$  cents per pound or \$1.15 per unit.

Potash (actual) from muriate,  $5\frac{1}{4}$  cents per pound or \$1.05 per unit.

TABLE NO. 6.—TANKAGE.

Ammonia, 7 cents per pound or \$1.40 per unit.

Total phosphoric acid,  $3\frac{1}{4}$  cents per pound or 70 cents per unit.

TABLE NO. 7.—TANKAGE AND POTASH.

Ammonia, 7 cents per pound or \$1.40 per unit.

Total phosphoric acid,  $3\frac{1}{4}$  cents per pound or 70 cents per unit.

Potash (actual) from sulphate,  $5\frac{1}{4}$  cents per pound or \$1.15 per unit.

Potash (actual) from muriate,  $5\frac{1}{4}$  cents per pound or \$1.05 per unit.

TABLE NO. 8.—BONES.

Ammonia,  $12\frac{1}{4}$  cents per pound or \$2.50 per unit.

Phosphoric acid, in "fine" bone,  $4\frac{1}{4}$  cents per pound or 85 cents per unit.

Phosphoric acid, in "medium" bone,  $3\frac{1}{4}$  cents per pound or 65 cents per unit.

Potash, if found present, valued same as in Table No. 1.

TABLE NO. 9.—POTASH SALTS.

Potash (actual) from sulphate,  $5\frac{1}{4}$  cents per pound or \$1.15 per unit.

Potash (actual) from muriate  $5\frac{1}{4}$  cents per pound or \$1.05 per unit.

On the last page of this report will be found the fertilizer law of the state, in force at this time.

W. W. MILLER, *Secretary*.

NOTE.—"Unit" is a trade expression used in speaking of the ingredients of commercial fertilizers, and means one per centum of a ton, or twenty pounds; e. g. ammonia  $12\frac{1}{4}$  cents per pound or \$2.50 per unit, that is, \$2.50 for twenty pounds.



16	Potato Special	Claimed	1.25	8.00	1.00	.....	8.00	9.22	2.81	.....	9.00	3.00	.....	16
	The Standard Fertilizer Co., Boston, Mass.	Found	1.60	8.38	2.81	.....	8.38	9.22	2.81	.....	11.19	3.18	.....	
17	Guano for all Crops	Claimed	1.25	8.00	2.00	.....	8.00	.....	2.00	.....	10.00	2.00	.....	17
	The Standard Fertilizer Co., Boston, Mass.	Found	1.55	8.31	3.00	.....	8.31	9.14	3.00	.....	11.31	2.31	.....	
18	Double Eagle Phosphate	Claimed	2.50	8.00	2.50	.....	8.00	.....	2.50	.....	10.50	0.50	.....	18
	The Baugh & Sons Co., Philadelphia, Pa.	Found	2.90	8.64	2.50	.....	8.64	9.50	2.50	.....	10.87	0.91	.....	
23	Ammoniated Bone with Potash	Claimed	3.00	6.00	2.00	.....	6.00	.....	2.00	.....	8.00	2.00	.....	23
	The Armour Fertilizer Works, Chicago, Ill.	Found	3.95	6.26	6.07	.....	6.26	6.89	6.07	.....	12.33	*3.14	.....	
24	Grain Grower	Claimed	2.00	8.00	2.00	.....	8.00	.....	2.00	.....	10.00	2.00	.....	24
	The Armour Fertilizer Works, Chicago, Ill.	Found	2.90	8.94	9.58	.....	8.94	9.83	9.58	.....	12.52	*2.95	.....	
25	Wheat, Corn and Oats Special	Claimed	1.00	8.00	2.00	.....	8.00	.....	2.00	.....	10.00	1.00	.....	25
	The Armour Fertilizer Works, Chicago, Ill.	Found	1.95	9.53	4.16	.....	9.53	10.48	4.16	.....	13.69	1.77	.....	
29	Harvest Bone	Claimed	0.75	10.00	.....	.....	10.00	.....	.....	.....	12.00	1.00	.....	29
	The Bowker Fertilizer Co., Boston, Mass.	Found	0.95	10.80	2.05	.....	10.80	11.88	2.05	.....	12.85	1.00	.....	
35	Tobacco Grower and Potato and Truck Fertilizer	Claimed	3.00	8.00	1.00	.....	8.00	.....	1.00	.....	9.00	4.00	.....	35
	The Ohio Farmers' Fert. Co., Columbus, O.	Found	2.35	10.11	1.40	.....	10.11	11.12	1.40	.....	11.51	3.35	.....	
37	Seeding Down Fertilizer	Claimed	1.00	7.00	2.00	.....	7.00	.....	2.00	.....	9.00	1.00	.....	37
	The Cumberland Bone Phos. Co., Boston, Mass.	Found	1.40	10.68	0.83	.....	10.68	11.75	0.83	.....	11.51	1.22	.....	
40	Potato and Root Phosphate	Claimed	1.00	8.00	2.00	.....	8.00	.....	2.00	.....	10.00	3.00	.....	40
	The Bradley Fertilizer Co., Boston, Mass.	Found	1.60	8.70	2.30	.....	8.70	9.57	2.30	.....	11.00	2.95	.....	
41	Dissolved Bone with Potash	Claimed	1.00	8.00	2.00	.....	8.00	.....	2.00	.....	10.00	2.15	.....	41
	The Bradley Fertilizer Co., Boston, Mass.	Found	1.55	9.33	3.52	.....	9.33	10.26	3.52	.....	12.85	1.93	.....	
44	Niagara Phosphate	Claimed	1.00	7.00	1.00	.....	7.00	.....	1.00	.....	8.00	1.08	.....	44
	The Bradley Fertilizer Co., Boston, Mass.	Found	1.25	9.65	3.52	.....	9.65	10.62	3.52	.....	13.17	1.16	.....	
48	Special Tobacco Grower	Claimed	3.00	8.00	2.05	.....	8.00	.....	2.05	.....	9.00	4.00	.....	48
	Geo. A. Bell, Wheelersburg, O.	Found	2.75	7.09	7.80	.....	7.09	7.80	2.05	.....	9.14	4.95	.....	

\* From sulphate. † From animal matter.



TABLE I.—MIXED FERTILIZERS, WITH POTASH — Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.				Potash (When included.)		Total Value.	Record Number.
			Per cent.	Value.	Available.		Insoluble.		Per cent.	Value.		
					Per cent.	Value.	Per cent.	Value.				
49	Sure Crop Phosphate The Bowker Fertilizer Co., Boston, Mass.	Claimed Found	1.00 1.10	..... 2.75	9.00 9.77	10.75	2.30	..... .69	2.00 2.20	2.31	..... 16.50	49
51	General Crop. The Crocker Fert. & Chem. Co., Buffalo, N. Y.	Claimed Found	1.00 1.25	..... 3.13	7.00 7.79	8.57	1.00 2.05	..... .62	1.08 1.23	1.29	..... 13.61	51
52	Corn and Wheat Special The Currie Fertilizer Co., Louisville, Ky.	Claimed Found	0.50 1.20	..... 3.00	9.50 11.38	12.52	1.50 2.43	..... .73	0.50 0.98	1.03	..... 17.28	52
53	Soluble Bone The Currie Fertilizer Co., Louisville, Ky.	Claimed Found	1.00 1.50	..... 3.75	9.50 11.19	12.31	1.50 3.90	..... 1.17	1.00 *1.27	1.46	..... 18.69	53
54	Spot Cash Fertilizer James McCallum & Co., Dayton, O.	Claimed Found	2.00 2.00	..... 5.00	8.00 12.48	13.73	3.25	..... .98	2.00 2.64	2.77	..... 22.48	54
55	Miami Phosphate James McCallum & Co., Dayton, O.	Claimed Found	1.00 0.90	..... 2.25	12.00 13.56	14.92	2.43	..... .73	1.50 2.91	3.06	..... 20.96	55
57	Iron City. The American Reduction Co., Pittsburg, Pa.	Claimed Found	3.00 3.00	..... 7.50	9.00 7.98	8.78	1.00 2.17	..... .65	2.00 2.51	2.64	..... 19.57	57
58	Common Sense The American Reduction Co., Pittsburg, Pa.	Claimed Found	2.00 2.55	..... 6.33	6.00 5.70	6.27	1.00 *1.85	..... 1.20	1.00 0.79	..... .83	..... 14.68	58
59	Vegetable Manure. The American Reduction Co., Pittsburg, Pa.	Claimed Found	3.00 3.95	..... 9.88	6.00 6.73	7.46	1.00 0.70	..... .21	6.70 6.69	7.02	..... 24.57	59

## COMMERCIAL FERTILIZERS.

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60	American Wheat Grower The Packers' Union Fert Co., New York, N. Y.	1.00 1.15	2.88	8.00 9.84	10.82	1.00 0.77	..... .38	9.00 10.61	2.00 2.33	2.45	16.38	60
63	Jones' Reliable The Jones Fertilizing Co., Cincinnati, O. ....	1.50 2.60	..... 6.50	8.50 9.98	..... 10.98	1.50 4.02	..... 1.21	10.00 14.00	1.25 *1.81	2.08	20.77	63
65	Lake Erie Fish Guano The Jarecki Chemical Co., Sandusky, O. ....	2.00 1.70	..... 4.25	10.00 10.49	..... 11.54	1.00 3.64	..... 1.09	11.00 14.13	1.00 0.87	..... .91	17.79	65
66	Number One Fish Guano The Jarecki Chemical Co., Sandusky, O. ....	1.00 1.15	..... 2.88	10.00 10.55	..... 11.61	1.00 2.62	..... .79	11.00 13.17	1.00 1.00	..... 1.05	16.33	66
67	Fish and Potash Grain Special The Jarecki Chemical Co., Sandusky, O. ....	1.50 1.60	..... 4.00	9.00 8.89	..... 9.78	1.00 3.00	..... .90	10.00 11.89	4.00 5.43	..... 5.70	20.38	67
69	Fish and Potash Potato Food The Jarecki Chemical Co., Sandusky, O. ....	1.00 1.40	..... 3.50	9.00 9.51	..... 10.46	1.00 2.56	..... .77	10.00 12.07	4.00 3.74	..... 3.93	18.66	69
70	O. K. Fertilizer The Jarecki Chemical Co., Sandusky, O. ....	0.50 0.55	..... 1.38	6.00 6.22	..... 6.84	1.00 1.08	..... .32	7.00 7.30	0.50 0.81	..... .85	9.39	70
71	A. Brand The Standard Fertilizer Co., Boston, Mass. ....	1.00 1.35	..... 3.38	7.00 8.95	..... 9.85	2.00 2.11	..... .63	9.00 11.06	1.00 1.35	..... 1.42	15.28	71
75	Homestead, a Bone Black Fertilizer Michigan Carbon Works, Detroit, Mich. ....	2.75 3.00	..... 7.50	9.00 9.52	..... 10.47	0.57	.17	10.09	1.75 2.20	..... 2.31	20.45	75
82	Ohio Farmers' Bone Superphosphate The Western Union Chem. Co., Cleveland, O. ....	1.50 1.85	..... 4.63	9.00 10.11	..... 11.12	3.00 2.94	..... .88	12.00 13.05	1.00 0.42	..... .44	17.07	82
83	Union Tobacco and Potato Fertilizer The Western Union Chem. Co., Cleveland, O. ....	1.50 1.90	..... 4.75	8.00 9.34	..... 10.27	3.00 2.43	..... .73	12.00 11.77	4.00 4.22	..... 4.43	20.18	83
87	Valley Gem Phosphate The Queen City Fertilizer Co., Cincinnati, O. ....	1.00 1.20	..... 3.00	10.00 12.34	..... 13.57	1.00 1.28	..... .38	11.00 13.62	1.00 *1.00	..... 1.15	18.10	87
89	Ammoniated Superphosphate and Potash The Queen City Fertilizer Co., Cincinnati, O. ....	2.00 1.90	..... 4.75	10.00 11.71	..... 12.88	1.00 1.21	..... .36	11.00 12.92	2.00 *1.70	..... 1.96	19.95	89

\* From sulphate.

† From animal matter.



COMMERCIAL FERTILIZERS.

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107	Wheat, Oats and Barley Phosphate The Milsom Rend. & Fert. Co., Buffalo, N. Y.	Claimed Found	1.50 1.65	..... 4.13	8.00 7.35	..... 8.09	1.00 2.62	..... .....	9.00 9.97	2.00 1.56	..... 1.64	..... 14.65	107
108	Erie King The Milsom Rend. & Fert. Co., Buffalo, N. Y.	Claimed Found	1.00 1.15	..... 2.88	7.00 6.27	..... 6.90	2.00 1.40	..... .....	9.00 7.67	2.00 2.10	..... 2.21	..... 12.41	108
110	Buffalo Guano. The Milsom Rend. & Fert. Co., Buffalo, N. Y.	Claimed Found	1.00 1.00	..... 2.50	8.00 7.99	..... 8.79	1.00 1.28	..... .....	9.00 9.27	4.00 4.24	..... 4.45	..... 16.12	110
111	B. B. Guano The Milsom Rend. & Fert. Co., Buffalo, N. Y.	Claimed Found	2.20 2.55	..... 6.38	5.00 3.90	..... 4.29	1.00 2.17	..... .....	6.00 6.07	1.08 1.02	..... 1.07	..... 12.39	111
113	Nobsque Guano The Pacific Guano Co., Boston, Mass.	Claimed Found	1.40 1.50	..... 3.75	8.00 8.82	..... 9.70	1.00 2.49	..... .....	9.00 11.31	2.00 2.06	..... 2.16	..... 16.36	113
115	Buffalo Fertilizer The Milsom Rend. & Fert. Co., Buffalo, N. Y.	Claimed Found	2.25 2.30	..... 5.75	8.00 7.41	..... 8.15	1.00 2.11	..... .....	9.00 9.52	1.50 1.56	..... 1.64	..... 16.17	115
117	Corn Fertilizer The Milsom Rend. & Fert. Co., Buffalo, N. Y.	Claimed Found	3.00 2.95	..... 7.38	8.00 7.34	..... 8.07	1.00 2.56	..... .....	9.00 9.90	2.00 1.89	..... 1.98	..... 18.20	117
119	Vegetable Bone Superphosphate. The Crocker Fert. & Chem. Co., Buffalo, N. Y.	Claimed Found	6.00 5.30	..... 13.25	6.00 7.17	..... 7.89	1.00 3.19	..... .....	7.00 10.36	5.94 6.13	..... 6.44	..... 29.65	119
120	Ammoniated Wheat and Corn The Crocker Fert. & Chem. Co., Buffalo, N. Y.	Claimed Found	2.50 2.85	..... 7.13	10.00 9.33	..... 10.26	1.00 3.07	..... .....	11.00 12.40	1.62 1.81	..... 1.90	..... 20.21	120
123	Red Line Complete Manure Michigan Carbon Works, Detroit, Mich.	Claimed Found	1.25 1.40	..... 3.50	8.00 8.88	..... 9.77	..... 1.15	..... .....	9.00 10.03	1.50 1.60	..... 1.68	..... 15.30	123
124	Good Grower Potato Phosphate The Williams & Clark Fert. Co., N. Y., N. Y.	Claimed Found	1.50 1.55	..... 3.88	6.00 9.46	..... 10.41	1.00 2.68	..... .....	7.00 12.14	5.41 4.24	..... 4.45	..... 19.54	124
125	Royal Bone Phosphate The Williams & Clark Fert. Co., N. Y., N. Y.	Claimed Found	1.25 1.55	..... 3.88	7.00 9.33	..... 10.26	1.00 3.13	..... .....	8.00 12.46	2.00 2.16	..... 2.27	..... 17.35	125
126	Grain and Grass Grower The Niagara Fert. Works, Buffalo, N. Y.	Claimed Found	1.00 1.25	..... 3.13	7.00 7.85	..... 8.64	1.00 2.05	..... .....	8.00 9.90	1.08 1.68	..... 1.76	..... 14.15	126

*e* From Sulphate. † From animal matter.



141	Ohio Special Potato Grower S. M. Hess & Bro., Philadelphia, Pa.	Claimed Pound	2.00	5.00	8.00	8.65	1.00	1.58	9.00	2.26	2.37	16.48	141
143	Grain and Grass Fertilizer The International Seed Co., Rochester, N. Y.	Claimed Pound	2.00	5.38	10.00	10.56	1.00	4.02	11.00	2.00	2.27	19.42	143
144	Potato and Truck Manure The International Seed Co., Rochester, N. Y.	Claimed Pound	1.50	4.25	8.00	8.93	1.00	3.39	9.00	7.00	6.98	21.18	144
145	Special Corn, Potato and Tobacco Fertilizer The E. Raub & Sons Fert. Co., Indianapolis, Ind.	Claimed Pound	4.00	9.38	8.84	7.52	†3.25	2.11	10.00	5.00	2.86	21.87	145
146	Soluble Bone The E. Raub & Sons Fert. Co., Indianapolis, Ind.	Claimed Pound	1.00	4.88	7.79	8.57	4.10	1.23	10.00	1.00	3.90	14.98	146
147	Dissolved Bone and Potash The E. Raub & Sons Fert. Co., Indianapolis, Ind.	Claimed Pound	2.00	6.13	7.17	7.89	4.47	1.34	10.00	1.50	1.58	16.94	147
148	Vegetable Bone Fertilizer The Milson Reud. & Fert. Co., Buffalo, N. Y.	Claimed Pound	5.00	12.75	8.00	6.74	†3.38	2.16	9.00	5.00	5.13	26.78	148
149	Homestead Potato Grower Michigan Carbon Works, Detroit, Mich.	Claimed Pound	2.35	8.00	8.50	9.99	0.50	0.42	10.00	5.00	4.15	22.56	149
151	P. A. P. for Potatoes and Truck The Royal Fertilizer Co., Cleveland, O.	Claimed Pound	1.00	3.25	10.00	11.75	2.49	.75	11.50	1.35	1.24	16.99	151
153	Potato Manure M. E. Wheeler & Co., Rutland, Vt.	Claimed Pound	2.50	6.63	8.00	9.14	2.00	.46	10.00	3.25	3.64	19.87	153
157	Universal Fertilizer The Packers' Union Fert. Co., New York, N. Y.	Claimed Pound	1.00	2.88	8.00	11.96	1.00	.27	9.00	5.00	4.52	19.63	157
158	Prolific Crop Producer The Williams & Clark Fert. Co., New York, N. Y.	Claimed Pound	1.00	3.38	6.00	9.78	1.00	.40	7.00	1.00	1.31	14.87	158
159	Electric Guano The International Seed Co., Rochester, N. Y.	Claimed Pound	1.00	4.00	8.00	9.57	2.00	.73	10.00	2.00	2.11	16.41	159

\* From sulphate. † From animal matter.

TABLE I — MIXED FERTILIZERS. WITH POTASH — Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.				Potash (When Included.)		Record Number.
			Per cent.	Value.	Per cent.	Value.	Insoluble.	Total per cent.	Per cent.	Value.	
160	Corn Phosphate The Great Eastern Fert. Co., Rutland, Vt. . . . .	Claimed Found	1.00 1.50	3.75	8.00 8.50	9.35	1.00 1.02	.31	4.00 5.39	19.07	160
161	Vegetable. Vine and Tobacco The Great Eastern Fert. Co., Rutland, Vt. . . . .	Claimed Found	2.50 2.10	5.25	8.00 8.31	9.14	1.00 1.72	.52	3.25 3.66	18.75	161
162	Wheat Special The Great Eastern Fert. Co., Rutland, Vt. . . . .	Claimed Found	2.00 1.40	3.50	8.00 7.99	8.79	1.00 1.66	.50	2.00 1.99	14.88	162
163	English Wheat Grower. The Great Eastern Fert. Co., Rutland, Vt. . . . .	Claimed Found	1.00 1.15	2.88	8.00 8.18	9.00	1.00 2.43	.73	2.00 2.45	15.18	163
165	Capital City Special Club Formula. The Columbus Phos. Co., Columbus, O. . . . .	Claimed Found	1.00 1.20	3.00	12.00 9.84	10.82	1.00 2.43	.73	3.00 2.45	17.12	165
166	Improved Superphosphate The I. P. Thomas & Son Co., Philadelphia, Pa. . . . .	Claimed Found	1.00 1.35	3.38	10.00 10.42	11.46	2.00 1.28	.38	1.00 1.62	16.92	166
169	Sweepstakes Bone The Loudonback Fert. Co., Urbana, O. . . . .	Claimed Found	2.00 1.35	3.38	8.00 9.08	9.99	1.00 2.43	.73	2.00 2.41	16.63	169
170	New Rival Ammoniated The Crocker Fert. & Chem. Co., Buffalo, N. Y. . . . .	Claimed Found	1.50 1.95	4.88	10.00 9.53	10.48	1.00 2.30	.69	1.62 1.50	17.63	170
172	Universal Grain Grower. The Crocker Fert. & Chem. Co., Buffalo, N. Y. . . . .	Claimed Found	1.00 1.20	3.00	7.00 7.80	8.58	1.00 1.79	.54	2.70 2.51	14.76	172

174	Ammoniated Bone Superphosphate. S. M. Hess & Bro., Philadelphia, Pa.	Claimed Found	2.00 1.75	4.38	9.00 8.13	1.00 2.30	.69	10.00 10.43	2.00 2.04	2.14	16.15	174
175	Dissolved Raw Bone and Potash. The Canton Fert. Co., Canton, O.	Claimed Found	2.00 2.75	6.88	9.34	5.56	1.67	12.00 14.90	2.70 *3.30	3.80	22.62	175
176	Bone and Meat The Canton Fert. Co., Canton, O.	Claimed Found	2.00 1.90	4.75	8.18	1.79	.54	10.00 9.97	2.00 2.39	2.51	16.80	176
177	Potato Manure. The Packers' Un. Fert. Co., New York, N. Y.	Claimed Found	2.50 2.10	5.25	8.00 9.85	1.00 1.40	.42	9.00 11.25	6.00 3.66	3.84	20.35	177
179	Peerless Bone Phosphate. The Canton Fert. Co., Canton, O.	Claimed Found	1.00 1.15	2.88	8.31	2.11	.63	9.00 10.42	1.00 1.47	1.54	14.19	179
180	Ohio Seedmaker with Potash The Cleveland Dryer Co., Cleveland, O.	Claimed Found	2.00 1.95	4.88	10.00 9.92	2.87	.86	15.00 12.79	2.00 2.55	2.68	19.33	180
181	Bone, Blood and Potash The Chicago Fert. Co., Chicago, Ill.	Claimed Found	1.50 2.25	5.63	9.00 9.80	2.00 9.39	2.82	11.00 19.19	2.00 *1.62	1.86	21.09	181
182	Empire Sheldon & Co., East Buffalo, N. Y.	Claimed Found	1.15 1.15	2.88	7.00 6.59	1.00 1.21	.36	8.00 7.80	1.00 1.50	1.58	12.07	182
183	Farmers' Favorite Sheldon & Co., East Buffalo, N. Y.	Claimed Found	1.40 1.70	4.25	8.00 7.54	1.00 2.49	.75	9.00 10.03	2.00 1.76	1.85	15.14	183
184	Potato Special. Sheldon & Co., East Buffalo, N. Y.	Claimed Found	1.65 1.85	4.63	8.00 6.90	1.00 2.43	.73	9.00 9.33	4.00 3.76	3.95	16.90	184
186	Calvert Guano The Zell Guano Co., Baltimore, Md.	Claimed Found	0.75 0.95	2.38	9.00 10.93	2.00 2.05	.62	11.00 12.98	1.50 1.62	1.70	16.72	186
187	Defiance Complete Manure. The Clark's Cove Fert. Co., Boston, Mass.	Claimed Found	1.00 1.55	3.88	6.00 9.52	1.00 2.81	.84	7.00 12.33	2.00 2.14	2.25	17.44	187
188	Mohawk Fertilizer The Quinnipiac Co., Boston, Mass.	Claimed Found	1.00 1.40	3.50	7.00 9.21	1.00 1.98	.59	8.00 11.19	1.08 1.37	1.44	15.66	188

\* From sulphate † From animal matter.



TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.				Potash.		Total Value.	Record Number.	
			Percent.	Value.	Available.	Insoluble.		Total percent.	(When included.)				
						Percent.	Value.						
										Percent.			Value.
189	Climax Phosphate The Quinnipiac Co., Boston, Mass.	Claimed Found	1.25 1.55	3.88	8.00 9.21	10.13	1.00 2.62	.79	9.00 11.83	2.16 1.97	2.07	16.87	189
190	Special Potato The Quinnipiac Co., Boston, Mass.	Claimed Found	1.50 1.50	3.75	6.00 9.39	10.33	1.00 2.62	.79	7.00 12.01	5.40 5.90	6.20	21.07	190
193	Corn Fertilizer M. E. Wheeler & Co., Rutland, Vt.	Claimed Found	2.00 2.10	5.25	8.00 10.11	11.12	2.00 3.00	.90	10.00 13.11	2.00 2.28	2.39	19.66	193
194	Royal Wheat Grower M. E. Wheeler & Co., Rutland, Vt.	Claimed Found	1.00 1.10	2.75	8.00 8.88	9.77	2.00 1.15	.35	10.00 10.03	2.00 1.85	1.94	14.81	194
200	Potato Phosphate The Pacific Guano Co., Boston, Mass.	Claimed Found	1.50 1.65	4.13	6.00 10.22	11.24	1.00 2.49	.75	7.00 12.71	5.40 5.32	5.59	21.71	200
202	Challenge Corn Grower The Northwestern Fert. Co., Chicago, Ill.	Claimed Found	2.50 3.50	8.75	8.00 8.19	9.01	2.00 12.87	1.87	10.00 11.06	0.54 0.75	.79	20.42	202
206	German Truck and Potato Manure The Walton Fert. Co., Cleveland, O.	Claimed Found	3.00 2.70	6.75	10.00 11.83	13.01	2.00 2.56	.77	12.00 14.39	4.00 *2.76	3.17	23.70	206
208	Chicago Brand Darling & Co., Chicago, Ill.	Claimed Found	2.50 2.95	7.38	7.00 5.32	5.85	4.00 19.39	6.10	11.00 14.71	1.00 *1.35	1.55	20.88	208
209	Sure Winner Brand Darling & Co., Chicago, Ill.	Claimed Found	1.50 2.20	5.50	7.00 7.61	8.37	5.00 15.75	3.74	12.00 13.36	3.00 *3.62	4.16	21.77	209

COMMERCIAL FERTILIZERS.

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214	Standard	1.00	3.38	8.00	9.35	1.34	.40	9.00	4.00	3.93	17.06	214
	The Read Fert. Co., New York, N. Y.	1.35		8.50				9.84	3.74			
215	Farmers' Friend	2.50		9.00				10.00	2.00			215
	The Read Fert. Co., New York, N. Y.	2.60	6.50	9.27	10.20	2.17		11.44	1.99	2.09	19.44	
218	Prize Potato and Tobacco Grower	2.00		10.00				12.00	4.00			218
	The Loudonback Fert. Co., Urbana, O.	1.85	4.63	7.04	7.74	1.00	.80	9.72	3.22	3.38	16.55	
219	Ontario Fish Guano and Potash	2.00		9.00				11.00	1.50			219
	The Walton Fert. Co., Cleveland, O.	2.20	5.50	8.76	9.64	2.00	.79	11.38	2.01	2.11	18.04	
221	Ox Special Tobacco Guano	2.00		10.00				11.00	2.00			221
	The Tennessee Chem. Co., Nashville, Tenn.	2.80	5.00	11.89	13.08	1.00	.27	12.79	*1.64	1.89	20.24	
227	Club and Grange Formula	1.00		8.00				9.80	1.08			227
	Farmers' Union Fert. Works, Buffalo, N. Y.	1.30	3.25	8.11	8.92	1.00	.77	10.67	1.20	1.26	14.20	
228	Potato Fertilizer	2.50		9.00				11.00	3.25			228
	The Bradley Fertilizer Co., Boston, Mass.	3.05	7.63	9.08	9.99	2.00	2.11	12.33	3.62	3.80	23.53	
229	Fruit and Root Crop Special	2.00		8.00				10.00	5.00			229
	The Armour Fertilizer Works, Chicago, Ill.	3.15	7.88	11.31	12.44	2.00	.58	13.23	5.80	6.09	26.99	
235	Special Compound	1.00		8.00				9.00	4.00			235
	S. M. Hess & Bro., Philadelphia, Pa.	1.85	4.63	9.08	9.99	1.00	.52	10.80	1.97	2.07	17.21	
236	Garden Special	2.50		5.00				7.80	10.00			236
	The Currie Fertilizer Co., Louisville, Ky.	2.65	6.63	5.95	6.55	1.00	.56	7.80	*11.05	12.71	26.45	
237	Lawn and Garden Fertilizer	1.00		1.00				5.75	6.00			237
	The Currie Fertilizer Co., Louisville, Ky.	5.40	13.50	3.01	3.31	2.50	1.78	5.75	*8.03	9.23	27.82	
238	Corn and Wheat Grower	4.00		9.00				11.00	4.00			238
	The J. & F. Schroth Packing Co., Cincinnati, O.	4.00	10.00	8.19	9.01	2.00	2.37	11.83	4.49	4.71	26.09	
239	Climax Tobacco and Potato Grower	1.00		9.50				11.50	1.00			239
	The Currie Fertilizer Co., Louisville, Ky.	1.40	3.50	12.35	13.59	2.00	.75	14.84	*1.43	1.64	19.48	

\* From sulphate. † From animal matter.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.				Potash (When included)		Total Value.	Record Number.
			Percent.	Value.	Available.		Insoluble.		Percent.	Value.		
					Percent.	Value.	Percent.	Value.				
241	Raw Bone and Phosphate Jas. McCallum & Co., Dayton, O.....	Claimed Found	2.00 2.10	5.25	0.00 10.24	11.76	4.53	1.36	1.50 1.91	2.01	19.88	241
242	Bone Meal..... McWha & Sturgeon, Steubenville, O.....	Claimed Found	1.25 0.85	2.13	11.00 10.87	11.96	1.00 4.99	1.50	2.50 *2.43	2.79	18.38	242
244	B. D. Sea Fowl Guano The Bradley Fertilizer Co., Boston, Mass.....	Claimed Found	2.50 2.85	7.13	8.00 9.15	10.07	2.00 3.96	1.19	1.50 1.35	1.42	19.81	244
247	Bone, Blood and Potash The Armour Fertilizer Works, Chicago, Ill..	Claimed Found	5.00 5.45	13.63	8.00 9.15	10.07	2.00 1.98	.59	7.00 *8.42	9.68	33.97	247
248	All Soluble..... The Armour Fertilizer Works, Chicago, Ill..	Claimed Found	3.50 3.87	9.68	8.00 8.18	9.00	2.00 *2.56	1.66	4.00 *4.34	4.99	25.33	248
250	Ten Per Cent. Manure The Bowker Fertilizer Co., Boston, Mass.....	Claimed Found	1.00 1.35	3.38	6.00 7.42	8.16	1.59	.48	10.00 9.62	10.10	22.12	250
253	Forest City Ammoniated Bone Superphosphate The Cleveland Dryer Co., Cleveland, O.....	Claimed Found	3.50 3.30	8.25	9.00 9.14	10.05	3.13	.94	1.00 0.66	.69	19.93	253
254	Potato and Truck Manure S. M. Hess & Bro., Philadelphia, Pa.....	Claimed Found	2.00 1.90	4.75	8.00 8.83	9.71	1.00 1.53	.46	6.00 6.47	6.79	21.71	254
256	Leader Guano The Read Fertilizer Co., New York, N. Y.....	Claimed Found	1.00 1.20	3.00	7.00 7.23	7.95	1.00 1.40	.42	2.00 1.85	1.98	13.35	256

258	Practical Potato Special. The Read Fertilizer Co., New York, N. Y.....	Claimed Found	1.00 1.25	3.13 4.48	4.00 4.93	1.00 0.77	.23	5.00 5.25	8.00 7.92	8.32	16.61	258
261	Planters' Complete Fertilizers. The Planters' Fertilizer Co., Carrollton, O..	Claimed Found	2.00 1.65	9.00 10.23	9.00 11.25	1.00 3.13	.94	10.00 13.36	1.00 1.35	1 42	17.74	261
266	Half and Half The Canton Fertilizer Co., Canton, O.....	Claimed Found	2.00 2.10	5.25	7.23	7.95	76.33	4.11	12.00 13.56	2.00 1.91	19.32	266
270	Complete Bone Black. The Crocker Fert. & Chem. Co., Buffalo, N. Y.	Claimed Found	2.25 2.95	7.38	8.00 6.46	7.11	1.00 1.15	.35	9.00 7.61	1.48 3.14	18.14	270
279	Ammoniated Food for Flowers The Bowker Fertilizer Co., Boston, Mass....	Claimed Found	2.00 2.60	6.50	4.00 7.10	7.81	6.52	1.96	6.00 13.62	2.00 *2.05	18.63	279
281	Corn and Potato Fertilizer The Pittsburg Provision Co., Pittsburg, Pa..	Claimed Found	2.50 2.25	5.63	10.00 7.68	8.45	3.00 5.62	1.69	13.00 13.30	3.25 *3.16	19.40	281
284	Butten Bone The Alliance Fertilizer Co., Alliance, O.....	Claimed Found	2.25 1.50	3.75	10.00 8.95	9.85	2.00 4.35	1.31	12.00 13.30	3.00 2.80	17.85	284
285	Soluble Bone and Polash The Alliance Fertilizer Co., Alliance, O.....	Claimed Found	1.25 0.90	2.25	9.00 7.03	7.73	1.00 3.71	1.11	10.00 10.74	2.50 2.35	13.56	285
286	Bone Black Phosphate and Potash The Alliance Fertilizer Co., Alliance, O.....	Claimed Found	1.00 1.00	2.50	7.00 8.64	9.50	1.00 4.41	1.32	8.00 13.05	2.00 2.43	15.87	286
289	Gilead Phosphate Geo. S. Bartlett, Cincinnati, O.....	Claimed Found	3.00 3.45	8.63	9.00 7.48	8.23	3.00 15.44	3.54	12.00 12.92	2.25 3.01	23.56	289
291	Bone and Potash, 3 per cent Swift & Company, Chicago, Ill.....	Claimed Found	3.00 3.50	8.75	10.50	11.55	12.33	8.01	23.50 22.83	3.00 *3.05	31.82	291
292	Potato Special. Walker, Stratman & Co., Pittsburg, Pa.....	Claimed Found	3.50 3.50	8.75	7.50 6.74	7.41	1.50 13.25	2.11	9.00 10.09	6.00 *6.80	26.09	292
295	Tobacco and Vegetable The Springfield Fertilizer Co., Springfield, O	Claimed Found	4.50 3.90	9.75	6.00 6.52	7.17	0.25 2.43	.73	8.95	7.00 7.74	25.78	295

\* From sulphate. † From animal matter.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.		Ammonia.		Phosphoric Acid.				Total per cent.		Potaash. (When included.)		Record Number.
		Percent.	Value.	Percent.	Value.	Percent.	Value.	Percent.	Value.	Percent.	Value.	Percent.	Value.	
296	Atlas The Springfield Fertilizer Co., Springfield, O.	2.00 2.05	5.13	8.00 6.78	7.46	.50 1.08	7.86	2.35 2.72	2.86	7.86	15.77	2.35 2.72	2.86	296
297	Soluble The Springfield Fertilizer Co., Springfield, O.	1.00 1.30	3.25	6.50 6.13	6.74	0.50 1.92	8.05	2.35 2.35	2.47	8.05	13.04	2.35 2.35	2.47	297
303	Ammoniated Dissolved Bone The Quinpiac Co., Boston, Mass.	2.00 2.25	5.63	9.00 8.83	9.71	1.00 1.66	10.00 10.49	2.00 2.39	2.51	10.00 10.49	18.35	2.00 2.39	2.51	303
304	Lima Special The Milsom Rend. & Fert. Co., Buffalo, N. Y.	1.22 0.95	2.38	7.00 6.27	6.90	1.00 1.40	8.00 7.67	15.00 15.64	16.42	8.00 7.67	26.12	15.00 15.64	16.42	304
305	Corn and Wheat Grower The Northwestern Fert. Co., Chicago, Ill.	2.50 3.55	8.88	10.00 9.15	10.07	2.00 2.68	12.00 11.83	1.00 0.79	.83	12.00 11.83	21.52	1.00 0.79	.83	305
307	Corn Grower Earl Herrick, Cleveland, O.	2.00 1.75	4.38	9.71	10.68	3.00	12.00 12.71	2.00 2.58	2.71	12.00 12.71	18.67	2.00 2.58	2.71	307
308	Special Potato, Bone and Potash Earl Herrick, Cleveland, O.	2.00 1.80	4.50	9.07	9.98	3.00	13.00 12.07	3.00	2.86	13.00 12.07	18.24	3.00	2.86	308
311	Guano Sheldon & Co., East Buffalo, N. Y.	2.00 2.25	5.63	7.00 5.00	5.50	1.00 2.17	8.00 7.17	1.00 1.62	1.70	8.00 7.17	13.48	1.00 1.62	1.70	311
315	Valley Phosphate The J.L. & H.Stadler Rd. & Ft.Co., Cleveland, O.	4.00 3.15	7.88	7.00 6.65	7.32	2.00 2.36	9.00 9.01	1.50 2.24	2.35	9.00 9.01	19.08	1.50 2.24	2.35	315

316	Four Fold Walker, Stratman & Co., Pittsburg, Pa.....	Claimed Found	2.00 2.00	5.00	7.75 6.90	7.59	1.25 1.98	..... .59	9.00 8.88	2.00 3.37	3.54 16.72	316
317	Standard Phosphate Farmers' Union Fert. Works, Buffalo, N. Y.....	Claimed Found	1.50 1.60	4.00	9.00 9.27	10.20	1.00 2.17	..... .65	10.00 11.44	2.00 1.64	1.72 16.57	317
321	Complete High Grade Fertilizer. S. F. Nettleton, Windfall, O.....	Claimed Found	2.00 1.75	4.38	12.00 13.05	14.36	2.00 1.85	..... .56	14.00 14.90	2.97 3.87	4.06 23.36	321
323	Wheat and Grass Grower S. F. Nettleton, Windfall, O.....	Claimed Found	1.00 1.30	3.25	10.00 12.23	13.45	1.00 1.46	..... .44	11.00 13.69	1.08 1.56	1.64 18.78	323
324	Animal Bone G. W. Rickard, Medina, O.....	Claimed Found	3.00 3.15	7.88	10.00 10.56	11.62	1.00 4.47	..... 1.34	11.00 15.03	3.24 4.39	4.61 25.45	324
327	Honestead Vegetable Grower Michigan Carbon Works, Detroit, Mich.....	Claimed Found	5.50 5.85	14.63	5.00 6.97	7.67	10.13	..... .08	7.10	6.50 7.07	7.42 29.80	327
329	Buckeye Wheat Grower The Bucyrus Fertilizer Co., Bucyrus, O.....	Claimed Found	1.50 1.40	3.50	9.86	10.85	4.47	..... 1.34	12.00 14.33	2.00 2.39	2.51 18.20	329
334	Tobacco and Potato Fertilizer Geo. S. Bartlett, Cincinnati, O.....	Claimed Found	4.00 3.35	8.88	9.00 9.60	10.56	2.00 4.66	..... 3.03	11.00 14.26	5.00 4.34	4.56 27.03	334
335	Seeding Down Fertilizer. The Ohio Farmers' Fertilizer Co., Columbus, O.....	Claimed Found	2.00 2.15	5.38	10.00 9.13	10.04	1.00 3.58	..... 1.07	11.00 12.71	2.50 2.35	2.47 18.96	335
337	Game Guano The Baltimore Guano Co., Baltimore, Md.....	Claimed Found	2.50 2.45	6.13	9.00 9.09	10.00	1.00 2.74	..... .82	10.00 11.83	2.50 2.70	2.84 19.79	337
338	Fish Guano The Baltimore Guano Co., Baltimore, Md.....	Claimed Found	2.00 2.25	5.63	8.00 8.25	9.08	1.00 3.52	..... 1.06	9.00 11.77	2.00 2.89	3.03 18.80	338
340	Lindale. Earl Herrick, Cleveland, O.....	Claimed Found	2.00 2.65	6.63	10.93	12.02	3.07	..... .92	11.00 14.00	0.50 0.46	.48 20.05	340
341	Western Bone Black and Polish The Chicago Fertilizer Co., Chicago, Ill.....	Claimed Found	0.50 0.15	.38	8.82	9.70	4.16	..... 1.25	10.00 12.58	2.50 2.33	2.45 13.78	341

† From animal matter.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.				Potash (When included.)		Total Value.	Record Number.
			Per cent.	Value.	Available.		Insoluble.		Per cent.	Value.		
					Per cent.	Value.	Per cent.	Value.				
348	Baker's Special W. C. and G. Mixture. The Chemical Co. of Canton, Baltimore, Md.	Claimed Found	1.00 1.15	2.88	9.00 9.21	10.13	1.00 2.17	.65	2.00 2.22	2.33	15.99	348
350	Urbana Bone Phosphate and Potash. The Loudonback Fertilizer Co., Urbana, O.	Claimed Found	1.00 1.00	2.50	9.00 8.69	9.56	1.00 3.58	1.07	1.00 0.98	1.03	14.16	350
352	Animal Corn Fertilizer The Packers' Un. Fert. Co., New York, N. Y.	Claimed Found	3.00 0.65	1.63	8.00 12.73	14.00	1.00 2.68	.80	2.00 2.24	2.35	18.78	352
355	Guano The Cumberland Bone-Phos.Co., Boston, Mass	Claimed Found	1.25 1.49	3.50	8.00 10.11	11.12	2.00 1.40	.42	2.00 1.87	1.96	17.00	355
361	Valley Potato Manure. The J.L. & H.Stadler Rd. & Ft.Co., Cleveland, O	Claimed Found	3.00 2.10	5.25	6.00 7.22	7.94	2.00 1.28	.38	5.00 6.74	7.08	20.65	361
366	Ammoniated Superphosphate. The Rasim-Monumental Co., Baltimore, Md.	Claimed Found	1.00 1.00	2.50	8.00 8.19	9.01	1.00 2.68	.80	1.00 1.41	1.48	13.79	366
371	Capital City Grain and Grass Grower The Columbus Phosphate Co., Columbus, O	Claimed Found	1.00 1.40	3.50	10.00 9.40	10.34	1.00 3.58	1.07	1.00 1.02	1.07	15.98	371
373	Hamm's Special The M. Hamm Co., Washington C. H., O.	Claimed Found	3.00 3.85	9.63	10.00 10.68	11.75	4.00 3.77	2.45	2.00 2.41	2.53	26.36	373
374	Acidulated Bone The M. Hamm Co., Washington C. H., O.	Claimed Found	1.00 1.85	4.63	8.00 9.72	10.69	1.00 2.11	.63	1.00 2.04	2.14	18.09	374

COMMERCIAL FERTILIZERS.

251

379	Soluble Pacific Guano..... The Pacific Guano Co., New York, N. Y....	Claimed Found	2.50 2.40	..... 6.00	8.00 9.53	..... 10.47	1.00 2.81	..... .84	9.00 12.33	1.50 1.46	..... 1.52	..... 18.83	379
386	Big Three Bone Phosphate with Potash Nelson Morris & Co., Chicago, Ill.....	Claimed Found	3.00 3.45	..... 8.63	4.01 4.41	..... 4.41	..... 6.66	..... 4.33	10.00 10.67	2.00 2.18	..... 2.29	..... 19.66	386
387	Big Four Bone Phosphate with Potash Nelson Morris & Co., Chicago, Ill.....	Claimed Found	5.00 5.85	..... 14.63	6.65 7.32	..... 7.32	..... 6.97	..... 4.53	12.00 13.62	4.00 3.99	..... 2.51	..... 28.99	387
388	Big Five Bone Phosphate with Potash Nelson Morris & Co., Chicago, Ill.....	Claimed Found	3.00 3.90	..... 9.75	4.02 4.42	..... 4.42	..... 6.27	..... 4.08	10.00 10.29	1.00 0.31	..... .33	..... 18.58	388
389	Lawrence's Wheat Special The Royal Fertilizer Co., Cleveland, O.....	Claimed Found	1.50 1.80	..... 4.50	10.00 10.55	..... 11.61	1.00 3.90	..... 1.17	..... 14.45	1.62 0.37	..... .39	..... 17.67	389
392	Ober's Farmers' Mixture..... The G. Ober & Sons Co., Baltimore, Md....	Claimed Found	1.00 1.40	..... 3.50	9.00 11.12	..... 12.23	2.00 1.46	..... .44	11.00 12.58	2.00 2.39	..... 2.51	..... 18.68	392
396	Universal Ammoniated Dissolved Bone The Williams & Clark Fert. Co., N. Y., N. Y.	Claimed Found	2.00 2.05	..... 5.13	8.00 10.29	..... 11.32	1.00 2.23	..... .67	9.00 12.82	2.00 2.41	..... 2.53	..... 19.65	396
397	Advance Phosphate The Queen City Fertilizer Co., Cincinnati, O.	Claimed Found	1.50 2.00	..... 5.00	8.50 9.77	..... 10.75	1.50 5.38	..... 3.50	10.00 15.15	1.25 1.72	..... 1.98	..... 21.23	397
398	Ammoniated Dissolved Bone The Standard Fertilizer Co., Boston, Mass..	Claimed Found	2.00 2.05	..... 5.13	9.00 9.34	..... 10.27	1.00 1.66	..... .50	10.00 11.00	2.00 1.74	..... 1.83	..... 17.73	398
399	Ox Special Wheat and Cern Guano The Tennessee Chem. Co., Nashville, Tenn...	Claimed Found	1.00 1.55	..... 3.88	12.00 13.43	..... 14.77	1.00 1.66	..... .50	13.00 15.09	1.00 1.79	..... 1.88	..... 21.03	399
400	Ammoniated Dissolved Bone The Currie Fertilizer Co., Louisville, Ky.....	Claimed Found	1.00 1.40	..... 3.50	7.00 8.89	..... 9.78	2.00 2.30	..... .69	9.00 11.19	1.00 1.24	..... 1.30	..... 15.27	400
401	Wheat Grower The Currie Fertilizer Co., Louisville, Ky.....	Claimed Found	1.50 1.10	..... 2.75	10.00 11.32	..... 12.45	2.00 3.39	..... 1.02	12.00 14.71	1.50 1.14	..... 1.31	..... 17.53	401
402	Soluble Bone and Potash Louisville Fertilizer Works, Louisville, Ky..	Claimed Found	1.00 1.00	..... 2.50	7.00 9.52	..... 10.47	0.75 1.28	..... .36	8.00 10.80	1.50 1.35	..... 1.42	..... 14.77	402

\* From saltpetre. † From animal matter.



TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.				Potash (When included.)		Total Value.	Record Number.	
			Per cent.	Value.	Available.		Insoluble.		Total per cent.	Per cent.			Value.
					Per cent.	Value.	Per cent.	Value.					
403	Red Line Crop Grower Michigan Carbon Works, Detroit, Mich.....	Claimed Found	2.00 2.00	5.00	8.00 9.15	10.07	1.72	.52	9.00 10.87	2.00 1.43	1.50	17.09	403
404	Wheat Grower The Globe Fertilizer Co., Louisville, Ky.....	Claimed Found	2.00 2.70	6.75	8.00 8.90	9.79	1.00 1.46	.44	10.00 10.36	2.00 2.64	3.04	20.02	404
411	Ammonia, Bone and Potash Swift & Company, Chicago, Ill.....	Claimed Found	2.25 2.95	7.38	8.00 10.23	11.25	3.00 2.56	1.66	11.00 12.79	2.00 2.74	3.15	23.44	411
412	Ox Bone with Ammonia and Potash The Tennessee Chemical Co., Nashville, Tenn.....	Claimed Found	1.00 1.35	3.38	10.00 11.18	12.30	1.00 1.34	.40	11.00 12.52	1.00 1.60	1.84	17.92	412
414	Ammoniated Bone Phosphate. The Detrick Fert. & Chem. Co., Baltimore, Md.....	Claimed Found	1.50 1.50	3.75	9.00 9.98	10.98	2.00 3.25	.98	11.00 13.23	1.00 0.96	1.01	16.72	414
417	Empire Guano. The Rasin-Monumental Co., Baltimore, Md..	Claimed Found	2.50 1.80	4.50	8.00 8.51	9.36	1.00 2.49	.75	9.00 11.00	1.50 1.93	2.03	16.64	417
420	Big Bonanza Walker, Stratman & Co., Pittsburg, Pa.....	Claimed Found	2.50 2.65	6.63	7.50 7.99	8.79	1.50 2.30	1.50	9.00 10.29	4.00 4.24	4.45	21.37	420
421	Wheat and Grass Grower. The Walton Fertilizer Co., Cleveland, O...	Claimed Found	1.00 0.80	2.00	10.00 9.27	10.20	2.00 2.11	.63	12.00 11.38	1.00 0.64	.67	13.50	421
422	Ammoniated Bone and Potash. The Ohio Farmers' Fert. Co., Columbus, O..	Claimed Found	1.00 1.00	2.50	8.00 8.82	9.70	1.00 3.25	.98	9.00 12.07	4.00 4.05	4.25	17.43	422

423	Bone and Fish Guano Mixture with 7% Potash The Jarecki Chemical Co., Sandusky, O.....	Claimed Found	2.50 2.45	6.13	5.00 5.88	6.47	12.00 16.66	4.33	17.00 12.54	7.00 7.20	7.56	24.49	423
424	High Grade Superphosphate of Bone D. Blocher & Co., Baltimore, Md.....	Claimed Found	1.50 1.30	3.25	9.00 11.45	12.60	2.00 1.53	.46	11.00 12.98	1.50 1.25	1.31	17.62	424
425	Crop Multiplier (Buffale Brand). The St. Louis Sanitary Co., St. Louis, Mo..	Claimed Found	2.50 2.75	6.88	9.00 10.68	11.75	3.00 1.46	.44	12.00 12.14	1.50 1.56	1.64	20.71	425
426	Havana Tobacco Grower M. E. Wheeler & Co., Rutland, Vt.....	Claimed Found	2.50 0.50	1.25	8.00 10.74	11.81	2.00 0.83	.25	10.00 11.57	8.00 9.54	10.02	23.33	426
429	Banner Crop Grower. S. Kauffman & Sons, Indianapolis, Ind.....	Claimed Found	1.50 1.20	3.00	7.00 7.09	7.80	2.00 12.30	1.50	9.39	1.00 0.27	.28	12.58	429
431	Farmers' Favorite Brand. Darling & Co., Chicago, Ill.....	Claimed Found	3.50 3.75	9.38	8.00 8.51	9.36	5.00 16.97	4.53	13.00 15.48	4.00 4.39	5.05	28.32	431
433	Glebe The Springfield Fertilizer Co., Springfield, O	Claimed Found	2.50 2.70	6.75	10.00 10.29	11.32	0.50 3.07	.92	13.36	2.00 2.76	2.90	21.89	433
437	Peerless Bone The E. Rauh & Sons Fert. Co., Indianapolis, Ind	Claimed Found	3.00 2.35	5.88	9.09	10.00	17.86	5.11	12.00 16.95	2.00 2.01	2.31	23.30	437
439	Special. McLean, Dahl & Co., Washington C. H., O..	Claimed Found	2.00 2.55	6.38	11.00 13.05	14.36	3.00 12.87	1.87	14.00 15.92	1.00 1.41	1.62	24.23	439
440	Ammoniated Bone and Potash Packers' Fertilizer Association, Chicago, Ill..	Claimed Found	1.50 1.20	3.00	10.00 12.79	14.07	2.00 2.56	.77	12.00 15.35	1.50 1.37	1.58	19.42	440
442	Superphosphate with Potash The Bucyrus Fertilizer Co., Bucyrus, O....	Claimed Found	2.00 2.00	5.00	12.41	13.65	11.34	.87	10.00 13.75	2.00 2.20	2.31	21.83	442
443	Critchfield's Fish Guano. The Tennessee Chem. Co., Nashville, Tenn...	Claimed Found	1.50 1.95	4.88	10.00 10.66	11.73	1.60 1.34	.40	11.00 14.00	1.35 1.01	1.06	18.97	443
446	True Balance Grain and Grass Fertilizer W. H. Kirk, Wellington, O.....	Claimed Found	2.00 2.20	5.50	8.00 9.28	10.21	2.00 1.59	.48	13.00 10.87	2.00 1.77	1.86	18.05	446

\* From sulphate. † From animal matter.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Concluded.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.				Potash		Total Value.	Record Number.		
			Per cent.		Value.		Per cent.		Value.				Total per cent.	
Per cent.	Value.	Per cent.	Value.	Per cent.	Value.	Per cent.	Value.	Per cent.	Value.					
447	Potato and Vegetable Phosphate. The Bowker Fertilizer Co., Boston, Mass.....	Claimed Found	2.00 2.10	5.25	8.00 9.39	10.33	2.68	.80	10.00 12.07	2.00 2.49	18.99	447		
451	Complete Manure..... The Potomac Fertilizer Co., Baltimore, Md.	Claimed Found	2.00 2.00	5.00	9.00 9.77	10.75	1.00 2.81	.84	10.00 12.58	1.00 1.12	17.77	451		
452	Stevens' Special Wheat and Corn The Crocker Fert. & Chem. Co., Buffalo, N. Y.	Claimed Found	2.00 2.40	6.00	8.00 9.40	10.34	1.00 0.96	.29	9.00 10.36	2.16 2.74	19.51	452		
453	World of Good Superphosphate. Packers' Fertilizer Association, Chicago, Ill....	Claimed Found	2.50 3.45	8.63	8.00 10.67	11.74	2.00 1.85	.56	10.00 12.52	1.50 *2.04	23.28	453		

\* From sulphate.

TABLE II.—MIXED FERTILIZERS, WITHOUT POTASH.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.				Total Value.	Record Number.	
			Per cent.	Value.	Available.		Insoluble.				Total per cent.
					Per cent.	Value.	Per cent.	Value.			
64	Jewel Phosphate. The Jones Fertilizing Co., Cincinnati, O.	Claimed Found	1.00 1.45	3.63	8.00 11.84	13.02	2.00 2.87	.86	10.00 14.71	17.51	64
92	Ruby Phosphate. Jas. McCallum & Co., Dayton, O.	Claimed Found	1.00 0.65	1.63	14.00 14.72	16.19	1.46	.44	15.00 16.18	18.26	92
96	Big 4 Phosphate. The Globe Fertilizer Co., Louisville, Ky.	Claimed Found	1.00 1.95	4.88	8.00 9.40	10.34	6.33	1.90	15.73	17.12	96
100	Acidulated Bone The Northwestern Fertilizing Co., Chicago, Ill.	Claimed Found	1.00 1.25	3.13	10.00 10.54	11.59	2.00 2.11	.63	12.00 12.65	15.35	100
101	Ohio Seed Maker The Cleveland Dryer Co., Cleveland, O.	Claimed Found	2.00 2.15	5.38	10.00 10.62	11.68	3.58	1.07	15.00 14.20	18.13	101
150	Old Honesty Phosphate The Royal Fertilizer Co., Cleveland, O.	Claimed Found	1.00 1.95	4.88	10.00 10.36	11.40	3.00 3.33	1.00	13.69	17.28	150
154	Entire Bone Phosphate The Western Union Chemical Co., Cleveland, O.	Claimed Found	1.25 1.80	4.50	9.00 10.80	11.88	3.00 3.07	.92	12.00 13.87	17.30	154
203	Prairie Phosphate. The Northwestern Fertilizing Co., Chicago, Ill.	Claimed Found	2.00 2.90	7.25	6.00 6.91	7.60	2.00 2.36	1.53	8.00 9.27	16.38	203
204	Diamond Cereals Soluble Bone The Walton Fertilizer Co., Cleveland, O.	Claimed Found	0.50 0.75	1.88	15.00 15.17	16.69	2.00 3.25	.98	17.00 18.42	19.55	204

† From animal matter.

TABLE II.—MINED FERTILIZERS, WITHOUT POTASH.—Concluded.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.						Total Value.	Record Number.
			Value.		Available.		Insoluble.		Total per cent.			
Per cent.	Value.	Per cent.	Value.	Per cent.	Value.	Per cent.	Value.	Per cent.	Value.			
2775	Red Line Ammoniated Phosphate Michigan Carbon Works, Detroit, Mich.....	Claimed Found	2.00 2.25	5.63	8.00 8.82	9.70	1.79	.54	9.00 10.61	15.87	275	
2288	Fine Ground Alkaline Bone The Alliance Fertilizer Co., Alliance, O.....	Claimed Found	0.75 .05	.13	8.00 7.86	8.65	1.00 1.02	.31	9.00 8.88	9.09	288	
3333	Lawnmore The E. Rauh & Sons Fertilizer Co., Indianapolis, Ind....	Claimed Found	2.00 2.65	6.63	12.00 7.86	8.65	12.00 15.61	4.68	24.00 23.47	19.96	333	
349	Baker's Dissolved Bone Phosphate The Chemical Co. of Canton, Baltimore, Md.....	Claimed Found	0.25 0.35	.88	13.00 14.13	15.54	1.00 2.56	.77	14.00 16.69	17.19	349	
357	Wheat Special The Chicago Fertilizer Co., Chicago, Ill.....	Claimed Found	0.50 0.90	2.25	11.20	12.32	9.65	2.90	13.00 20.85	17.47	357	
362	Bone and Meat The J. L. & H. Stadler Rend. & Fert. Co., Cleveland, O..	Claimed Found	2.50 2.75	6.88	6.00 7.09	7.80	5.00 3.84	1.15	12.00 10.93	15.83	362	
381	Dissolved Bone The Rasin-Monumental Co., Baltimore, Md.....	Claimed Found	2.00 2.50	6.25	10.00 9.58	10.54	1.00 3.00	.90	11.00 12.58	17.69	381	
407	Acidulated Bone The E. Rauh & Sons Fertilizer Co., Indianapolis, Ind....	Claimed Found	0.50 1.55	3.88	15.00 9.33	10.26	1.00 3.90	1.17	16.00 13.23	15.31	407	
413	Wheat Special The I. P. Thomas & Son, Co., Philadelphia, Pa.....	Claimed Found	0.50 0.75	1.88	12.00 14.01	15.41	1.34	.40	15.35 17.69	413		

419	Pride of Ohio. Earl Herrick, Cleveland, O.....	Claimed Found	2.00 1.60	..... 4.00	..... 11.07	..... 12.18	..... 2.62	..... .79	11.00 13.69	..... 16.97	419
427	Half Pure Raw Bone and Half Pure Bone Phosphate The E. Rauh & Sons Fertilizer Co., Indianapolis, Ind....	Claimed Found	2.00 1.90	..... 4.75	..... 10.44	..... 11.48	..... 12.14	..... 3.64	22.00 22.58	..... 19.87	427

TABLE III.—DISSOLVED BONE.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.				Total Value.	Record Number.	
			Per cent.	Value.	Available.		Insoluble.				Total per cent.
					Per cent.	Value.	Per cent.	Value.			
45	Abattoir Bone Dust. The Bradley Fertilizer Co., Boston, Mass.	Claimed Found	2.00 2.05	5.13	6.61	7.27	12.20	7.93	14.00 20.33	45	
130	Square Bone The Cleveland Dryer Co., Cleveland, O.	Claimed Found	2.50 3.15	7.88	6.00 8.45	9.30	11.06	7.19	20.00 24.37	130	
245	Ohio Valley Bone Dust Wheeling Butchers' Association, Wheeling, W. Va.	Claimed Found	3.80 3.75	9.38	8.73	9.60	18.47	5.51	17.00 24.49	245	
251	Improved Bone The Western Union Chemical Co., Cleveland, O.	Claimed Found	3.00 3.25	8.13	5.00 9.69	9.56	12.00 17.36	4.78	21.00 22.47	251	
267	Half and Half The Western Union Chemical Co., Cleveland, O.	Claimed Found	2.25 3.15	7.88	8.00 8.96	9.86	6.00 18.69	5.65	15.00 23.39	267	
409	Ammoniated Bone Meal The Jones Fertilizing Co., Cincinnati, O.	Claimed Found	5.50 5.35	13.38	7.00 7.86	8.65	11.00 17.93	5.15	18.00 27.18	409	
432	Bone and Blood Fertilizer Geo. Rupp & Co., Hamilton, O.	Claimed Found	4.85 4.75	11.88	7.74	8.51	19.08	5.90	19.76 26.29	432	
438	Sure Growth Phosphate Packers' Fertilizer Association, Chicago, Ill.	Claimed Found	1.50 1.30	3.25	10.00 11.13	12.24	2.00 13.00	1.95	12.00 17.44	438	

441	Chicago Bone Meal.....	3.00	.....	.....	.....	18.00	.....
	Packers' Fertilizer Association, Chicago, Ill.....	3.20	8.00	13.44	14.76	5.15	27.93
							441
449	Pure Ground Bone.....	4.00	.....	.....	.....	22.93	.....
	The Baltimore Guano Co., Baltimore, Md.....	5.90	14.75	11.14	12.25	3.65	30.65
							449

† From animal matter.



TABLE IV.—ROCK PHOSPHATE.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid.				Total Value.	Record Number.
			Available.		Insoluble	Total per cent.		
			Per cent.	Value.				
					Per cent.	Value.		
2	Diamond <S> Phosphate Swift & Company, Chicago, Ill.	Claimed Found	10.00 12.08	..... 13.29	1.00 1.92	..... 13.29	11.00 14.00	2
4	Acid Phosphate Swift & Company, Chicago, Ill.	Claimed Found	16.00 17.47	..... 19.22	1.00 1.98	..... 19.22	17.00 19.45	4
14	Dissolved Bone Phosphate The Standard Fertilizer Co., Boston, Mass.	Claimed Found	10.00 12.92	..... 14.21	2.00 1.72	..... 14.21	12.00 14.64	14
19	High Grade Superphosphate The Baugh & Sons Co., Philadelphia, Pa.	Claimed Found	14.00 16.69	..... 18.36	1.00 0.38	..... 18.36	15.00 17.07	19
20	Economy The M. Hamm Co., Washington C. H., O.	Claimed Found	10.00 12.72	..... 13.99	1.00 1.79	..... 13.99	11.00 14.51	20
26	Star Phosphate The Armour Fertilizer Works, Chicago, Ill.	Claimed Found	12.00 13.56	..... 14.92	2.00 4.86	..... 14.92	16.00 18.42	26
32	Dissolved Bone Phosphate The Bowker Fertilizer Co., Boston, Mass.	Claimed Found	10.00 12.03	..... 13.23	..... 1.46	..... 13.23	12.00 13.49	32
34	C. and G. Phosphate J. W. Hunter, Baltimore, Md.	Claimed Found	10.00 13.04	..... 14.34	2.00 0.83	..... 14.34	12.00 13.87	34
39	Dissolved Bone Phosphate The Cumberland Bone Phosphate Co., Boston, Mass.	Claimed Found	10.00 11.19	..... 12.31	2.00 3.39	..... 12.31	12.00 14.58	39

43	Acid Phosphate The Bradley Fertilizer Co., Boston, Mass.	Claimed Found	10.00 10.75	11.83	2.00 2.23	12.00 12.98	11.83	43
46	Potomac Bone Phosphate The Potomac Fertilizer Co., Baltimore, Md.	Claimed Found	14.00 15.35	16.89	2.00 0.70	16.00 16.05	16.89	46
50	Erie The Crocker Fertilizer & Chemical Co., Buffalo, N. Y.	Claimed Found	11.00 11.90	13.09	2.00 1.79	13.00 13.69	13.09	50
62	Acidulated Bone The Packers' Union Fertilizer Co., New York, N. Y.	Claimed Found	14.00 15.54	17.09	1.00 1.66	15.00 17.20	17.09	62
68	C. O. D. Phosphate The Jarecki Chemical Co., Sandusky, O.	Claimed Found	14.00 14.46	15.91	1.00 1.15	15.00 15.61	15.91	68
72	Acid Phosphate The Ohio Farmers' Fertilizer Co., Columbus, O.	Claimed Found	9.00 9.85	10.84	1.00 1.21	10.00 11.06	10.84	72
73	Superior Phosphate The Ohio Farmers' Fertilizer Co., Columbus, O.	Claimed Found	13.00 13.89	15.28	1.00 2.23	14.00 16.12	15.28	73
76	Dissolved Bone, Justice Brand The Bradley Fertilizer Co., Boston, Mass.	Claimed Found	12.00 12.92	14.21	1.00 1.59	13.00 14.51	14.21	76
79	Plain Superphosphate The Quinnipiac Co., Boston, Mass.	Claimed Found	10.00 11.20	12.32	2.00 3.25	12.00 14.45	12.32	79
80	Soluble Dissolved Bone The Quinnipiac Co., Boston, Mass.	Claimed Found	13.00 13.56	14.92	1.00 1.98	14.00 15.54	14.92	80
84	International Phosphate The Western Union Chemical Co., Cleveland, O.	Claimed Found	12.00 13.95	15.35	2.00 1.08	14.00 15.03	15.35	84
86	Bull Dog Phosphate The Western Union Chemical Co., Cleveland, O.	Claimed Found	10.00 11.69	12.86	2.00 0.77	12.00 12.46	12.86	86
88	Special Wheel Grower The Queen City Fertilizer Co., Cincinnati, O.	Claimed Found	9.00 10.81	11.89	1.00 1.08	10.00 11.89	11.89	88

TABLE IV.—ROCK PHOSPHATE—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid.					Total Value.	Record Number.
			Available.		Insoluble	Total per cent.			
			Per cent.	Value.					
							Per cent.		
90	High Grade Wheat and Grass Grower The Queen City Fertilizer Co., Cincinnati, O.	Claimed Found	14.00 16.38	18.02	1.00 0.57	15.00 16.95	18.02	90	
103	XXX Superphosphate The Cleveland Dryer Co., Cleveland, O.	Claimed Found	13.00 13.53	14.88	1.92	15.00 15.45	14.88	103	
105	Herscheid Phosphate The Cleveland Dryer Co., Cleveland, O.	Claimed Found	10.00 10.81	11.89	3.19	12.00 14.00	11.89	105	
109	Dissolved Bone The Milsom Rendering & Fertilizer Co., Buffalo, N. Y.	Claimed Found	11.06 12.09	13.30	1.37 2.94	12.37 15.03	13.30	109	
112	Dissolved Bone Phosphate of Lime The Pacific Guano Co., Boston, Mass.	Claimed Found	13.00 14.39	15.83	1.00 0.96	14.00 15.35	15.83	112	
114	Acid Phosphate The Pacific Guano Co., Boston, Mass.	Claimed Found	10.00 11.82	13.00	2.00 0.83	12.00 12.65	13.00	114	
122	Acid Phosphate Michigan Carbon Works, Detroit, Mich.	Claimed Found	14.00 15.48	17.03	0.77	15.00 16.25	17.03	122	
128	Queen City Phosphate The Niagara Fertilizer Works, Buffalo, N. Y.	Claimed Found	11.00 11.77	12.95	2.00 1.72	13.00 13.49	12.95	128	
136	Sovereign Acid Phosphate The Clark's Cove Fertilizer Co., Boston, Mass.	Claimed Found	12.00 12.85	14.14	1.00 0.77	13.00 13.62	14.14	136	

COMMERCIAL FERTILIZERS.

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138	Special Dissolved Bone Phosphate The Walton Fertilizer Co., Cleveland, O.	Claimed Found	12.00 13.56	14.92	2.00 3.33	14.00 16.89	14.92	138
142	Soluble Bone S. M. Hess & Bro., Philadelphia, Pa.	Claimed Found	14.00 14.79	16.27	2.00 1.46	16.00 16.25	16.27	142
167	S. C. Phosphate The I. P. Thomas & Son Co., Philadelphia, Pa.	Claimed Found	14.00 15.16	16.68	2.00 2.43	16.00 17.59	16.68	167
185	Dissolved Bone Sheldon & Co., E. Buffalo, N. Y.	Claimed Found	10.00 12.34	13.57	1.00 0.83	11.00 13.17	13.57	185
192	Acid Phosphate The Jones Fertilizing Co., Cincinnati, O.	Claimed Found	8.00 7.29	8.02	2.00 1.34	10.00 8.63	8.02	192
196	Acorn Brand Acid Phosphate The Williams & Clark Fertilizer Co., New York, N. Y.	Claimed Found	13.00 14.14	15.55	1.00 1.85	14.00 15.99	15.55	196
197	Acidulated Bone The Loudonback Fertilizer Co., Urbana, O.	Claimed Found	13.00 13.94	15.33	1.00 1.92	16.00 15.86	15.33	197
198	Animal Tantage and Guano The Loudonback Fertilizer Co., Urbana, O.	Claimed Found	9.00 9.21	10.13	1.00 2.30	11.00 11.51	10.13	198
199	Alliance Phosphate The Royal Fertilizer Co., Cleveland, O.	Claimed Found	11.50 11.33	12.46	1.00 1.72	11.50 13.05	12.46	199
201	Quick Acting Phosphate The Northwestern Fertilizing Co., Chicago, Ill.	Claimed Found	10.00 13.24	14.56	2.00 2.49	12.00 15.73	14.56	201
205	Reliable Dissolved Bone The Walton Fertilizer Co., Cleveland, O.	Claimed Found	14.00 14.59	16.05	2.00 2.68	16.00 17.27	16.05	205
216	Dissolved Bone or Acid Phosphate The Read Fertilizer Co., New York, N. Y.	Claimed Found	12.00 14.08	15.49	1.40	14.00 15.48	15.49	216
223	Dissolved Bone The Bucyrus Fertilizer Co., Bucyrus, O.	Claimed Found	16.95	18.65	1.92	14.00 18.87	18.65	223

TABLE IV.—ROCK PHOSPHATE—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid.				Total Value.	Record Number.
			Available.		Insoluble	Total per cent.		
			Per cent.	Value.				
243	Clover Leaf Superphosphate McWha & Sturgeon, Steubenville, O.	Claimed Found	14.00 14.96	..... 16.46	1.00 2.11	15.00 17.07	..... 16.46	243
246	Capital City Wheat Grower The Columbus Phosphate Co., Columbus, O.	Claimed Found	14.00 14.01	..... 15.41	1.00 2.11	15.00 16.12	..... 15.41	246
249	Electrical Dissolved Bone M. E. Wheeler & Co., Rutland, Vt.	Claimed Found	14.00 16.09	..... 17.70	2.00 1.05	16.00 17.14	..... 17.70	249
265	Capital City Acid Phosphate. The Columbus Phosphate Co., Columbus, O.	Claimed Found	12.00 9.84	..... 10.82	1.00 2.36	13.00 12.20	..... 10.82	265
273	Apex Bone Phosphate. The Bowker Fertilizer Co., Boston, Mass.	Claimed Found	9.00 10.43	..... 11.47	..... 1.40	11.00 11.83	..... 11.47	273
274	Soluble Bone. The Bowker Fertilizer Co., Boston, Mass.	Claimed Found	14.00 16.25	..... 17.88	1.00 1.02	15.00 17.27	..... 17.88	274
276	Wolverine Phosphate Michigan Carbon Works, Detroit, Mich.	Claimed Found	7.50 8.70	..... 9.57	..... 0.44	8.00 9.14	..... 9.57	276
278	Bear High Grade Dissolved Bone The Continental Fertilizer Co., Nashville, Tenn.	Claimed Found	14.00 14.14	..... 15.55	1.00 2.23	15.00 16.37	..... 15.55	278
280	Dissolved Bone Phosphate. The Williams & Clark Fertilizer Co., New York, N. Y.	Claimed Found	10.00 11.07	..... 12.18	2.00 3.13	12.00 14.20	..... 12.18	280

282	<b>Dissolved Bone</b> The Great Eastern Fertilizer Co., Rutland, Vt.....	Claimed Found	14.00 17.08	..... 18.79	1.00 1.34	..... 18.42	..... 18.79	282
299	<b>Number One</b> The Springfield Fertilizer Co., Springfield, O.....	Claimed Found	14.00 14.33	..... 15.76	0.75 1.46	..... 15.79	..... 15.76	299
	<b>Dissolved Bone Phosphate</b> Farmers' Union Fertilizer Works, Buffalo, N. Y.....	Claimed Found	14.00 17.14	..... 18.85	2.00 0.83	16.00 17.97	..... 18.85	300
	<b>No. 1 Acid Phosphate</b> The Chicago Fertilizer Co., Chicago, Ill.....	Claimed Found	..... 11.32	..... 12.45	..... 2.43	..... 14.00 13.75	..... 12.45	319
320	<b>No. 2 Acid Phosphate</b> The Chicago Fertilizer Co., Chicago, Ill.....	Claimed Found	..... 8.89	..... 9.78	..... 2.11	..... 11.00 11.00	..... 9.78	320
322	<b>Dissolved Bone Fertilizer</b> S. F. Nettleton, Windfall, O.....	Claimed Found	14.00 16.57	..... 18.23	2.00 0.83	16.00 17.40	..... 18.23	322
325	<b>Dissolved Bone</b> G. W. Rickard, Medina, O.....	Claimed Found	16.00 16.94	..... 18.63	2.00 0.26	18.00 17.20	..... 18.63	325
326	<b>Economy Fertilizer</b> G. W. Rickard, Medina, O.....	Claimed Found	10.00 11.72	..... 12.89	1.00 0.32	11.00 12.04	..... 12.89	326
344	<b>Dissolved Bone Black, Wheat Special</b> The Jarecki Chemical Co., Sandusky, O.....	Claimed Found	16.00 15.60	..... 17.16	1.00 0.83	17.00 16.43	..... 17.16	344
345	<b>Dissolved Bone Phosphate</b> The Zell Guano Co., Baltimore, Md.....	Claimed Found	14.00 16.89	..... 18.58	2.00 1.46	16.00 18.35	..... 18.58	345
346	<b>Dissolved S. C. Phosphate</b> The Zell Guano Co., Baltimore, Md.....	Claimed Found	12.00 16.45	..... 18.10	2.00 1.59	14.00 18.04	..... 18.10	346
351	<b>Waring's T. and P. Superphosphate</b> J. W. Hunter, Baltimore, Md.....	Claimed Found	14.00 16.50	..... 18.15	2.00 1.98	16.00 18.48	..... 18.15	351

• From sulphate.

TABLE IV.—ROCK PHOSPHATE—Concluded.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid.				Total per cent.	Total Value.	Record Number.
			Available.		Insoluble				
			Per cent.	Value.	Per cent.	Value.			
360	Dissolved Phosphate The I. P. Thomas & Son Co., Philadelphia, Pa.	Claimed Found	10.00 9.86	10.85	1.00. 5.68	11.00 15.54	10.85	360	
363	Live and Let Live Phosphate The J. L. & H. Stadler Rend. & Fert. Co., Cleveland O.	Claimed Found	4.55 5.10	5.61	4.01 7.48	8.56 12.58	5.61	363	
365	Dissolved Bone Phosphate The G. Ober & Sons Co., Baltimore, Md.	Claimed Found	14.00 16.69	18.36	2.00 0.26	16.00 16.95	18.36	365	
370	Dissolved Bone No. 2 The Bucyrus Fertilizer Co., Bucyrus, O.	Claimed Found	8.50	9.35	1.98	8.00 10.48	9.35	370	
375	Dissolved Bone The M. Hamm Co., Washington C. H., O.	Claimed Found	16.00 15.99	17.59	1.00 0.70	17.00 16.69	17.59	375	
376	Dissolved Bone Phosphate The Crocker Fertilizer & Chemical Co., Buffalo, N. Y.	Claimed Found	14.00 15.42	16.96	1.00 2.36	15.00 17.78	16.96	376	
383	Acid Phosphate The Rasin-Monumental Co., Baltimore, Md.	Claimed Found	14.00 11.19	12.31	1.00 3.39	15.00 14.58	12.31	383	
391	Dissolved Bone, Justice Brand, 14% The Bradley Fertilizer Co., Boston, Mass.	Claimed Found	14.00 15.16	16.68	2.00 1.79	16.00 16.95	16.68	391	
395	Ox High Grade Dissolved Bone The Tennessee Chemical Co., Nashville, Tenn.	Claimed Found	14.00 13.24	14.56	1.00 2.30	15.00 15.54	14.56	395	

416	Soluble Bone Phosphate The Detrick Fertilizer & Chemical Co., Baltimore, Md.	Claimed Found	14.00 15.35	..... 16.89	0.75 1.28	14.75 16.63	..... 16.89	416
428	Soluble Bone Phosphate The Susquehanna Fertilizer Co., Baltimore, Md.	Claimed Found	14.00 15.61	..... 17.17	1.00 1.72	..... 17.33	..... 17.17	428
434	Number Four The Springfield Fertilizer Co., Springfield, O.	Claimed Found	8.00 7.16	..... 7.88	0.50 1.59	..... 8.75	..... 7.88	434
435	Elm Phosphate Jno. S. Reese & Co., Baltimore, Md.	Claimed Found	14.00 15.29	..... 16.82	1.00 1.40	15.00 16.69	..... 16.82	435
445	Critchfield's Standard Phosphate The Tennessee Chemical Co., Nashville, Tenn.	Claimed Found	14.00 14.38	..... 15.82	1.00 2.05	15.00 16.43	..... 15.82	445
448	Farmers' Dissolved Bone The Baltimore Guano Co., Baltimore, Md.	Claimed Found	14.00 14.07	..... 15.48	1.00 2.43	15.00 16.50	..... 15.48	448



TABLE V.—ROCK PHOSPHATE AND POTASH.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid.				Potash.		Total Value.	Record Number.
			Available.		Insoluble.	Total per cent.	Per cent.	Value.		
			Per cent.	Value.						
3	Phosphate and Potash. Swift & Company, Chicago, Ill.	Claimed Found	12.00 13.31	..... 14.64	1.00 2.17	13.00 15.48	2.00 *2.14	..... 2.46	..... 17.10	3
21	Dissolved Bone and Potash The M. Hamm Co., Washington C. H., O.	Claimed Found	12.00 14.77	..... 16.25	1.00 2.30	13.00 17.07	1.00 1.27	..... 1.33	..... 17.58	21
27	Phosphate and Potash The Armour Fertilizer Works, Chicago, Ill.	Claimed Found	10.00 10.30	..... 11.33	2.00 5.88	12.00 16.18	2.00 *1.81	..... 2.08	..... 13.41	27
31	Superphosphate with Potash. The Bowker Fertilizer Co., Boston, Mass.	Claimed Found	10.00 10.16	..... 11.18	..... 2.49	12.00 12.65	2.00 2.58	..... 2.71	..... 13.89	31
33	Waring's T. and P. with Potash J. W. Hunter, Baltimore, Md.	Claimed Found	10.00 11.19	..... 12.31	2.00 2.17	12.00 13.36	1.00 1.43	..... 1.50	..... 13.81	33
38	Bone and Potash The Cumberland Bone Phosphate Co., Boston, Mass.	Claimed Found	8.00 10.02	..... 11.02	2.00 2.05	10.00 12.07	2.50 3.05	..... 3.20	..... 14.22	38
42	Alkaline Bone with Potash The Bradley Fertilizer Co., Boston, Mass.	Claimed Found	11.00 11.64	..... 12.80	1.00 1.72	12.00 13.36	2.43 2.14	..... 2.25	..... 15.05	42
47	Wheat, Oats and Corn Grower. George A. Bell, Wheelersburg, O.	Claimed Found	10.00 8.69	..... 9.56	..... 1.92	11.00 10.61	2.00 1.70	..... 1.79	..... 11.35	47
56	Competitor Phosphate Jas. McCallum & Co., Dayton, O.	Claimed Found	10.00 10.87	..... 11.96	..... 0.57	11.00 11.44	1.00 0.14	..... .15	..... 12.11	56

61	Wheat, Oats and Clover The Packers' Union Fertilizer Co., New York, N. Y.	Claimed Found	11.00 13.12	..... 14.43	1.00 1.59	12.00 14.71	2.00 *1.45	..... 1.67	16.10 .....	61
74	Soluble Bone and Potash The Ohio Farmers' Fertilizer Co., Columbus, O.	Claimed Found	12.00 13.04	..... 14.34	1.00 2.11	13.00 15.15	1.00 0.87	..... .91	15.25 .....	74
77	Dissolved Bone and Potash The Pacific Guano Co., Boston, Mass.	Claimed Found	10.00 10.22	..... 11.24	1.00 2.11	11.00 12.33	2.16 1.85	..... 1.94	13.18 .....	77
78	Dissolved Bone Phosphate with Potash The Bowker Fertilizer Co., Boston, Mass.	Claimed Found	10.00 11.00	..... 12.10	..... 2.30	12.00 13.30	1.00 1.00	..... 1.05	13.15 .....	78
81	High Grade Corn and Wheat Grower with Potash The Queen City Fertilizer Co., Cincinnati, O.	Claimed Found	11.00 11.00	..... 12.10	1.00 0.83	12.00 11.83	2.00 1.87	..... 1.96	14.06 .....	81
85	Dissolved Bone and Potash The Western Union Chemical Co., Cleveland, O.	Claimed Found	12.00 11.90	..... 13.09	2.00 2.17	14.00 14.07	5.00 4.99	..... 5.24	18.33 .....	85
99	Bone and Potash The Northwestern Fertilizing Co., Chicago, Ill.	Claimed Found	10.00 10.80	..... 11.88	2.00 2.56	12.00 13.36	1.25 *0.91	..... 1.95	12.93 .....	99
116	Dissolved Bone and Potash The Milsom Rendering & Fertilizer Co., Buffalo, N. Y.	Claimed Found	9.00 10.05	..... 11.06	2.00 0.44	11.00 10.49	1.65 2.14	..... 2.25	13.31 .....	116
118	Alkaline Bone and Potash The Crocker Fertilizer & Chemical Co., Buffalo, N. Y.	Claimed Found	8.00 9.60	..... 10.56	1.00 1.53	9.00 11.13	5.00 3.85	..... 4.04	14.60 .....	118
132	Bone and Potash The Standard Fertilizer Co., Boston, Mass.	Claimed Found	10.00 10.62	..... 11.68	1.00 2.43	11.00 13.05	2.00 4.39	..... 4.61	16.29 .....	132
152	Dissolved Bone with Potash The Jarecki Chemical Co., Sandusky, O.	Claimed Found	12.00 11.58	..... 12.74	1.00 1.34	13.00 12.92	4.00 3.87	..... 4.06	16.80 .....	152
156	XXX Phosphate with Potash The Cleveland Dryer Co., Cleveland, O.	Claimed Found	12.00 11.64	..... 12.80	..... 2.17	14.00 13.81	5.40 5.01	..... 5.26	18.06 .....	156
168	Ox Alkaline Bone The Tennessee Chemical Co., Nashville, Tenn.	Claimed Found	12.00 12.27	..... 13.50	1.00 0.90	13.00 13.17	2.00 1.58	..... 1.66	15.16 .....	168

\* From sulphate.

TABLE V.—ROCK PHOSPHATE AND POTASH—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid.				Potash.		Total Value.	Record Number.
			Available.		Insoluble.	Total per cent.	Percent	Value.		
			Percent.	Value.						
171	Superior Alkaline Bone..... The Crocker Fertilizer & Chemical Co., Buffalo, N. Y.....	Claimed Found	11.00 13.37	..... 14.71	1.00 1.66	12.00 15.03	1.35 *1.31	..... 1.51	..... 16.22	171
173	High Grade Acid Phosphate..... S. M. Hess & Bro., Philadelphia, Pa.....	Claimed Found	14.00 16.11	..... 17.72	2.00 0.32	16.00 16.43	0.40 0.10	..... .11	..... 17.83	173
195	Grass and Oats..... M. E. Wheeler & Co., Rutland, Vt.....	Claimed Found	11.00 11.19	..... 12.31	1.00 1.21	12.00 12.40	2.00 2.26	..... 2.37	..... 14.68	195
207	Emperor Phosphate..... S. M. Hess & Bro., Philadelphia, Pa.....	Claimed Found	20.00 11.89	..... 13.08	2.00 1.28	12.00 13.17	1.00 1.95	..... 2.05	..... 15.13	207
212	Big Crop Bone Phosphate and Potash..... Geo. W. Mace, Greenville, O.....	Claimed Found	11.00 10.11	..... 11.12	1.00 1.59	12.00 11.70	3.00 2.43	..... 2.55	..... 13.67	212
213	Capital City Dissolved Bone and Potash..... The Columbus Phosphate Co., Columbus, O.....	Claimed Found	12.00 13.36	..... 14.70	1.00 1.79	13.00 15.15	4.00 2.91	..... 3.06	..... 17.76	213
217	Bone and Potash or Alkaline Bone..... The Read Fertilizer Co., New York, N. Y.....	Claimed Found	10.00 10.23	..... 11.25	..... 1.02	11.00 11.25	3.00 3.10	..... 3.26	..... 14.51	217
220	Dissolved Bone and Potash..... The Crocker Fertilizer & Chemical Co., Buffalo, N. Y.....	Claimed Found	8.00 8.44	..... 9.28	1.00 1.28	9.00 9.72	2.00 2.04	..... 2.14	..... 11.42	220
222	Natural Plant Food..... The Bucyrus Fertilizer Co., Bucyrus, O.....	Claimed Found	12.73 14.00	..... 2.68	..... 2.68	9.00 15.41	1.50 1.97	..... 2.07	..... 16.07	222

COMMERCIAL FERTILIZERS.

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224	Dissolved Bone and Potash. Farmers' Union Fertilizer Works, Buffalo, N. Y.	Claimed Found	8.00 10.30	11.33	1.00 1.40	9.00 11.70	2.00 1.20	1.26	12.59	224
226	Wheat Maker. The Ohio Farmers' Fertilizer Co., Columbus, O.	Claimed Found	12.00 10.17	11.19	1.00 3.77	13.00 13.94	2.50 1.43	1.50	12.69	226
232	Special Corn Fertilizer. The I. P. Thomas & Son Co., Philadelphia, Pa.	Claimed Found	10.00 6.77	7.45	2.00 5.94	12.00 12.71	6.50 6.69	7.02	14.47	232
255	Soluble Bone and Potash. The Great Eastern Fertilizer Co., Rutland, Vt.	Claimed Found	11.00 12.73	14.00	1.00 1.08	13.81	2.00 1.83	1.92	15.92	255
259	Wheat and Clover. M. E. Wheeler & Co., Rutland, Vt.	Claimed Found	11.00 13.30	14.63	1.00 1.28	12.00 14.58	2.00 1.31	1.51	16.14	259
260	Red Line Phosphate with Potash. Michigan Carbon Works, Detroit, Mich.	Claimed Found	10.00 8.05	8.86	4.22	12.00 12.27	3.00 3.07	3.22	12.08	260
262	Wheat and Grass Special. The Planters' Fertilizer Co., Carrollton, O.	Claimed Found	11.00 13.24	14.56	1.00 1.79	12.00 15.03	2.25 1.85	1.94	16.50	262
263	Horsehead Phosphate with Potash. The Cleveland Dryer Co., Cleveland, O.	Claimed Found	8.00 11.06	12.17	2.94	12.00 14.00	1.00 1.06	1.11	13.28	263
271	Dissolved Bone and Potash. The Williams & Clark Fertilizer Co., New York, N. Y.	Claimed Found	10.00 10.41	11.45	1.00 2.05	11.00 12.46	2.16 2.18	2.29	13.74	271
272	Dissolved Bone and Potash. The Quinpiac Co., Boston, Mass.	Claimed Found	10.00 10.67	11.74	1.00 1.79	11.00 12.46	2.16 2.30	2.42	14.16	272
287	Farmers' Friend. The Alliance Fertilizer Co., Alliance, O.	Claimed Found	10.00 8.25	9.08	1.00 4.86	11.00 13.11	1.00 1.35	1.42	10.50	287
298	Favorite. The Springfield Fertilizer Co., Springfield, O.	Claimed Found	8.00 7.09	7.80	0.50 0.96	8.11	1.50 1.76	1.85	9.65	298
310	Dissolved Bone and Potash. Sheldon & Co., East Buffalo, N. Y.	Claimed Found	10.00 10.99	12.09	1.00 0.96	11.00 11.95	2.00 1.99	2.09	14.18	310

• From sulphate.

TABLE V.—ROCK PHOSPHATE AND POTASH—Concluded.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid.				Potaash.		Total Value.	Record Number.
			Available.		Insoluble.	Total per cent.	Per cent.	Value.		
			Per cent.	Value.						
318	Western Bone and Potash. The Chicago Fertilizer Co., Chicago, Ill.	Claimed Found	12.00 14.01	..... 15.41	1.00 1.98	13.00 15.99	1.10 1.66	..... 1.74	..... 17.15	318
330	Dissolved Bone and Potash Niagara Fertilizer Works, Buffalo, N. Y.	Claimed Found	8.00 7.87	..... 8.66	1.00 1.08	9.00 8.95	2.00 2.35	..... 2.47	..... 11.13	330
339	Farmers' Alkaline Bone The Baltimore Guano Co., Baltimore, Md.	Claimed Found	10.00 10.49	..... 11.54	1.00 2.49	11.00 12.98	2.00 2.57	..... 2.70	..... 14.24	339
356	Dissolved Bone and Extra Potash. Sheldon & Co., East Buffalo, N. Y.	Claimed Found	10.00 9.78	..... 10.76	1.00 0.51	11.00 10.29	4.00 4.78	..... 5.02	..... 15.78	356
358	Grain and Grass The Ohio Farmers' Fertilizer Co., Columbus, O.	Claimed Found	12.00 11.65	..... 12.82	1.00 3.96	13.00 15.61	1.00 0.56	..... .59	..... 13.41	358
359	Urbana Acidulated Bone and Potash. The Loudonback Fertilizer Co., Urbana, O.	Claimed Found	10.00 10.04	..... 11.04	1.00 3.39	12.00 13.43	1.00 1.23	..... 1.29	..... 12.33	359
377	Triumph Bone and Potash. The Clark's Cove Fertilizer Co., New York, N. Y.	Claimed Found	10.00 10.80	..... 11.88	1.00 1.21	11.00 12.01	2.16 1.70	..... 1.79	..... 13.67	377
380	Crown Phosphate and Potash. John S. Reese & Co., Baltimore, Md.	Claimed Found	12.00 12.92	..... 14.21	2.00 0.51	14.00 13.43	2.00 1.95	..... 2.05	..... 16.26	380
382	Bone and Potash. The Rasin-Monumental Co., Baltimore, Md.	Claimed Found	12.00 11.06	..... 12.17	1.00 1.59	13.00 12.65	1.00 1.70	..... 1.79	..... 13.96	382

393	Ox Bone and Potash The Tennessee Chemical Co., Nashville, Tenn.....	Claimed Found	12.00 10.86	..... 11.95	1.00 1.72	13.00 12.58	1.00 *0.77	..... .89	..... 12.84	393
415	Alkaline Bone The Detrick Fertilizer & Chemical Co., Baltimore, Md.....	Claimed Found	10.00 10.74	..... 11.81	1.00 2.11	11.00 12.85	2.00 2.22	..... 2.33	..... 14.14	415
430	Dissolved Bone Phosphate and Potash Geo. W. Mace, Greenville, O.....	Claimed Found	13.00 12.54	..... 13.79	2.00 4.28	15.00 16.82	1.50 1.18	..... 1.24	..... 15.03	430
450	Banner Wheat Grower The Packers Union Fertilizer Co., New York, N. Y.....	Claimed Found	10.00 12.10	..... 13.31	1.00 1.46	13.00 13.56	0.50 0.33	..... .35	..... 13.66	450
454	Bear Special Wheat and Corn Grower The Continental Fertilizer Co., Nashville, Tenn.....	Claimed Found	11.00 10.56	..... 11.62	1.00 1.15	12.00 11.71	2.00 2.47	..... 2.59	..... 14.21	454

\*From sulphate.

TABLE VI.—TANKAGE.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.		Total Value.	Record Number.
			Percent.	Value.	Percent.	Value.		
225	Packing House Fertilizer. The Cleveland Provision Co., Cleveland, O.....	Claimed Found	8.00 8.00	\$11.20	15.00 12.94	\$ 9.06	\$20.26	225
240	Acidulated Bone Meal. The Jones Fertilizing Co., Cincinnati, O.....	Claimed Found	4.00 5.40	7.56	14.50 14.71	10.30	17.86	240
290	Bone Tankage. Swift & Company, Chicago, Ill.....	Claimed Found	6.00 6.40	8.96	17.00 16.76	11.73	20.69	290
354	Bone and Blood. The Armour Fertilizer Works, Chicago, Ill.....	Claimed Found	7.00 7.45	10.43	10.00 9.21	6.45	16.88	354
367	Ground Bone. The Rasin-Monumental Co., Baltimore, Md.....	Claimed Found	4.00 4.35	6.09	20.64 18.10	12.67	18.76	367
394	Ground Bone. S. M. Hess & Bro., Philadelphia, Pa.....	Claimed Found	3.00 4.50	6.30	22.00 19.70	13.79	20.09	394
418	Bone Tankage Fertilizer. Hostler & Dern, Circleville, O.....	Claimed Found	4.00 5.20	7.28	20.98 19.06	13.34	20.62	418
444	German Cologne. J. L. Norton, Delaware, O.....	Claimed Found	5.00 3.40	4.76	26.00 17.53	12.27	17.03	444

TABLE VII.—TANKAGE AND POTASH.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.		Ammonia.		Phosphoric Acid.		Potash		Total Value.	Record Number.
		Claimed	Found	Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		
11	Tobacco and Pezais Grever The Jones Fertilizing Co., Cincinnati, O.			4.50	\$7.56	12.00	\$8.59	5.00	\$5.59	\$21.74	11
				5.40		12.27		*4.86			

\* From sulphate.



TABLE VIII.—BONES

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.				Potash (When included.)		Total Value.	Record Number.	
			Per cent.	Value.	In fine bone.		In medium bone.		Total per cent.	Per cent.			Value.
					Per cent.	Value.	Per cent.	Value.					
7	Fine Raw Bone The Northwestern Fertilizing Co., Chicago, Ill.	Claimed Found	4.00 5.00	\$12.50	14.13	\$12.01	8.30	\$5.40	22.00 22.43			\$29.91	7
15	Extra Fine Ground Bone. The Standard Fertilizer Co., Boston, Mass.	Claimed Found	2.00 2.40	6.00	10.93	9.29	3.27	2.13	14.00 14.20			17.42	15
22	Bone Meal The Armour Fertilizer Works, Chicago, Ill.	Claimed Found	3.00 3.00	7.50	24.22	20.59	2.39	1.55	24.00 26.61			29.64	22
28	Superior Pure Ground Bone with Potash Jas. McCallum & Co., Dayton, O.	Claimed Found	4.00 5.40	13.50	10.08	8.57	9.30	6.05	23.00 19.38	1.50 1.23	1.29	29.41	28
30	Bone Meal The Bowker Fertilizer Co., Boston, Mass.	Claimed Found	2.00 2.60	6.50	15.27	12.98	9.48	6.16	20.00 24.75			25.64	30
36	Fine Ground Bone Meal The Ohio Farmers' Fertilizer Co., Columbus, O.	Claimed Found	2.00 2.20	5.50	15.05	12.79	3.30	2.15	20.00 18.35			20.44	36
121	Decalcified Bone Michigan Carbon Works, Detroit, Mich.	Claimed Found	1.50 1.90	4.75	25.06	21.30	6.86	4.46	25.00 31.92			30.51	121
155	Fine Ground Bone. The American Reduction Co., Pittsburg, Pa.	Claimed Found	4.00 5.10	12.75	17.82	15.15	2.78	1.81	23.00 20.60			29.71	155
164	Pure Bone The Great Eastern Fert. Co., Rutland, Vt.	Claimed Found	2.00 4.85	12.13	15.90	13.52	6.49	4.22	22.00 22.39			29.87	164

178	<b>Cyclone Bone Meal.</b> The Milsom Rend. & Fert. Co., Buffalo, N. Y.	3.00 4.10	10.25 16.54	14.06 14.06	6.87 4.47	22.00 23.41	28.78	178
191	<b>Bone Meal.</b> The Jones Fertilizing Co., Cincinnati, O.	4.00 4.20	10.50 16.66	14.16 14.16	4.83 3.14	20.00 21.49	27.80	191
210	<b>Pure Ground Bone</b> Darling & Co., Chicago, Ill.	3.00 3.30	8.25 20.40	17.34 17.34	2.25 3.46	23.00 23.86	27.84	210
211	<b>Raw Bone</b> The Chicago Fertilizing Co., Chicago, Ill.	4.00 4.20	10.50 15.87	13.49 13.49	4.22 2.74	16.12 20.09	26.73	211
230	<b>Pure Bone Flour.</b> Geo. S. Bartlett, Cincinnati, O.	4.00 4.35	10.88 20.13	17.11 17.11	3.41 2.22	23.00 23.54	30.21	230
231	<b>Bone Meal</b> Geo. A. Bell, Wheelersburg, O.	4.00 5.85	14.63 11.12	9.45 8.39	5.45 19.51	21.00 19.51	29.53	231
233	<b>Raw Bone Meal</b> Swift & Company, Chicago, Ill.	4.50 4.75	11.88 17.73	15.07 15.07	4.98 3.24	23.00 22.71	30.19	233
234	<b>Ground Steamed Bone</b> Swift & Company, Chicago, Ill.	3.00 3.40	8.50 23.52	19.99 19.99	2.33 1.51	25.00 25.85	30.00	234
252	<b>Pure Bone Meal</b> The Crocker Fert. & Chem. Co., Buffalo, N. Y.	2.00 2.40	6.00 24.50	20.83 20.83	5.19 3.37	23.00 29.69	30.20	252
257	<b>Ground Bone</b> The Read Fertilizer Co., New York, N. Y.	2.50 3.55	8.88 15.19	12.91 12.91	11.23 7.30	23.00 26.42	29.09	257
264	<b>Superior Bone.</b> The Cleveland Dryer Co., Cleveland, O.	4.00 3.75	9.38 13.33	11.33 11.33	8.35 5.43	22.00 21.68	26.14	264
268	<b>Acidulated Bone Meal</b> The Armour Fertilizer Works, Chicago, Ill.	2.00 2.70	6.75 21.77	18.50 18.50	1.90 1.24	18.00 23.67	26.49	268
269	<b>Raw Bone Meal.</b> The Armour Fertilizer Works, Chicago, Ill.	4.50 4.35	10.88 19.78	16.81 16.81	5.74 3.73	22.00 25.52	31.42	269

TABLE VIII.—BONES—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.				Potash (When included.)		Total Value.	Record Number.
			Per cent.	Value.	In fine bone.		In medium bone.		Per cent.	Value.		
					Per cent.	Value.	Per cent.	Value.				
277	Bone Meal. The Milsom Rend. & Fert. Co., Buffalo, N. Y.	Claimed Found	2.00 3.80	9.50	18.55	15.77	6.02	3.91			29.18	277
283	Pure Raw Bone. The Alliance Fertilizer Co., Alliance, O.	Claimed Found	4.60 4.55	11.38	22.00 12.25	10.41	9.63	6.26			28.05	283
293	Pure Raw Bone Meal. Walker, Stratman & Co., Pittsburg, Pa.	Claimed Found	4.00 5.00	12.50	14.61	12.42	8.04	5.23			30.15	293
294	Pure Ground Bone. The Crocker Fert. & Chem. Co., Buffalo, N. Y.	Claimed Found	4.00 4.85	12.13	13.38	11.37	8.75	5.69			29.19	294
301	Pure Ground Bone. The Northwestern Fertilizing Co., Chicago, Ill.	Claimed Found	3.00 3.55	8.88	19.36	16.46	3.41	2.22			27.56	301
302	Unas Bone Meal. The Quinnipiac Co., Boston, Mass.	Claimed Found	2.00 2.50	6.25	13.16	11.19	3.40	2.21			19.65	302
306	Fine Ground Bone. The Pacific Guano Co., Boston, Mass.	Claimed Found	2.00 2.95	7.38	12.27	10.43	3.46	2.25			20.06	306
309	Pure Bone Meal Sheldon & Co., East Buffalo, N. Y.	Claimed Found	3.28 4.15	10.38	14.61	12.42	7.20	4.68			27.48	309
312	Fine Ground Bone. Sheldon & Co., East Buffalo, N. Y.	Claimed Found	2.00 3.00	7.50	15.80	13.43	6.14	3.99			24.92	312

313	<b>Carlet Ground Bone.</b> The Williams & Clark Fert. Co., New York, N. Y.	Claimed Found	2.00 2.75	6.88	13.00	11.05	3.56	.....	.....	14.00 16.56	.....	.....	20.24	313
314	<b>Pure Raw Bone Meal</b> The J. L. & H. Stadler Rd. & Ft. Co., Cleveland, O.	Claimed Found	4.50 5.10	12.75	17.97	15.27	4.22	.....	.....	23.00 22.19	.....	.....	30.76	314
331	<b>Big Two Bone Meal</b> Nelson Morris & Co., Chicago, Ill.	Claimed Found	2.50 2.55	6.38	24.94	21.20	4.75	.....	.....	28.00 29.69	.....	.....	30.67	331
332	<b>Pure Bone Meal</b> C. A. Standen, Elyria, O.	Claimed Found	4.70 4.65	11.63	20.53	17.45	3.20	.....	.....	24.50 23.72	.....	.....	31.16	332
336	<b>Fine Ground Bone</b> The Bradley Fertilizer Co., Boston, Mass.	Claimed Found	3.00 3.05	7.63	16.20	13.77	4.97	.....	.....	21.00 21.17	.....	.....	24.63	336
342	<b>Royal Bone Meal</b> The Royal Fertilizer Co., Cleveland, O.	Claimed Found	4.00 4.20	10.50	14.53	12.95	4.34	.....	.....	20.00 18.87	.....	.....	25.67	342
343	<b>Pure Ground Bone</b> The Jarecki Chemical Co., Sandusky, O.	Claimed Found	3.00 3.20	8.00	18.06	15.35	5.10	.....	.....	25.00 23.16	.....	.....	26.67	343
347	<b>Ground Bone and Pelash</b> The Pacific Guano Co., Boston, Mass.	Claimed Found	2.25 2.10	5.25	8.10	6.89	3.73	.....	.....	9.00 11.83	2.00 3.37	3.54	18.10	347
353	<b>Pure Raw Bone Meal</b> The Pittsburg Provision Co., Pittsburg, Pa.	Claimed Found	5.00 5.05	12.63	17.10	14.54	4.14	.....	.....	25.00 21.24	.....	.....	29.86	353
364	<b>Pure Bone Meal</b> The Williams & Clark Fert. Co., New York, N. Y.	Claimed Found	3.00 3.10	7.75	13.65	11.60	5.80	.....	.....	20.00 19.45	.....	.....	23.12	364
368	<b>Pure Bone Meal</b> L. Frank & Sons, Zanesville, O.	Claimed Found	3.00 4.55	11.38	9.98	8.48	9.98	.....	.....	24.00 19.96	.....	.....	26.35	368
369	<b>Superior Pure Ground Bone</b> The Bucyrus Fertilizer Co., Bucyrus, O.	Claimed Found	4.50 4.45	11.13	14.07	11.96	7.04	.....	.....	21.00 21.11	.....	.....	27.67	369
372	<b>Fine Ground Bone Meal</b> The M. Hamm Co., Washington C. H., O.	Claimed Found	2.50 2.90	7.25	19.46	16.54	4.27	.....	.....	24.00 23.73	.....	.....	26.57	372

TABLE VIII.—BONES—Concluded.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.				Potash (When included.)		Total Value.	Record Number.
			Per cent.	Value.	In fine bone.		In medium bone.		Per cent.	Value.		
					Per cent.	Value.	Per cent.	Value.				
378	Chicago Bone Meal. The Chicago Fertilizer Co., Chicago, Ill.....	Claimed Found	2.00 3.10	7.75	18.41	15.65	4.04	2.63			26.03	378
384	Fine Steamed Bone The Bucyrus Fertilizer Co., Bucyrus, O.....	Claimed Found	2.00 3.10	7.75	12.13	10.31	7.76	5.04			23.10	384
385	Big One Raw Bone Nelson Morris & Co., Chicago, Ill.....	Claimed Found	4.00 4.65	11.63	14.59	12.40	8.57	5.57			29.60	385
390	Tiger Bone Meal. The Western Union Chemical Co., Cleveland, O.....	Claimed Found	4.50 3.25	8.13	16.76	14.25	6.84	4.45			26.83	390
405	Raw Bone Meal. The E. Rauh & Sons Fert. Co., Indianapolis, Ind.....	Claimed Found	4.00 2.30	5.75	17.36	14.76	1.51	.98			21.49	405
406	Pure Ground Bone The E. Rauh & Sons Fert. Co., Indianapolis, Ind.....	Claimed Found	4.00 3.00	7.50	12.04	10.23	5.93	3.85			21.58	406
408	Imperial Raw Bone. The Ohio Farmers' Fertilizer Co., Columbus, O.....	Claimed Found	4.00 3.60	9.00	11.42	9.71	6.43	4.18			22.89	408
410	Pure Bone M. E. Wheeler & Co., Rutland, Vt.....	Claimed Found	2.00 2.65	6.63	18.96	16.12	10.59	6.88			29.63	410
436	Banner Raw Bone Michigan Carbon Works, Detroit, Mich.....	Claimed Found	3.75 3.80	9.50	5.01	4.26	22.82	14.83			28.59	436

PRECIPITATED PHOSPHATE.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid.						Total Value.	Record Number.
			Available		Insoluble		Total per cent.			
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		
328	Banner Dissolved Bone, Michigan Carbon Works, Detroit, Mich	Claimed Found	30.00 34.10	..... \$37.51	..... 2.23	..... .....	32.00 36.33	..... \$37.51	328	

## LIST OF COMMERCIAL FERTILIZERS PROPERLY LICENSED

And offered for sale in Ohio in 1899, but samples of which were *not found* by the Secretary or Deputies on the markets, hence they have not been analyzed, and their valuations do not appear in this report.

## MANUFACTURERS' CLAIMS.

Address of Manufacturer and Name of Fertilizer.	Ammonia.	Phosphoric Acid.				Potash.
		Available.	Insoluble.	Total		
	Per cent.	Per cent.	Per cent.	Per cent.		
						Per cent.
The Abbott & Martin Rendering Co., Columbus, O.— Peerless Bone and Potash..... Standard Phosphate.....	0.50 .....	8.00 9.00	..... .....	9.00 10.00	..... .....	2.50 .....
The Armour Fertilizer Works, Chicago, Ill.— Cereal Phosphate.....	.....	10.00-12.00	3.00-5.00	13.00-17.00	.....	.....
H. J. Baker & Bro., 100 William St., New York, N. Y.— Standard UnXid Fertilizer.....	2.25	8.00	.....	.....	.....	2.25
Geo. S. Bartlett, Cincinnati, O.— Indian Brand Ohio Valley Phosphate..... Indian Brand Phoenix Phosphate.....	2.00 2.00	8.00 7.00	3.00 2.00	11.00 9.00	.....	2.00 1.00
Baugh & Sons Co., Philadelphia, Pa.— Raw Bone Superphosphate.....	2.00	8.00	3.00	11.00	.....	1.00
D. Blocher & Co., Gettysburg, Pa.— Dissolved Raw Bone and Potash..... Ammoniated Soluble Bone Phosphate.....	2.50-3.00 0.50-1.00	9.00-11.00 8.00-10.00	2.50-3.25 2.00-3.00	11.50-14.25 10.00-13.00	.....	2.50-3.00* 1.50-2.50





LIST OF COMMERCIAL FERTILIZERS PROPERLY LICENSED—Continued.  
MANUFACTURERS' CLAIMS.

Address of Manufacturer and Name of Fertilizer.	Ammonia.	Phosphoric Acid.				Potash.	
		Available.		Insoluble.		Total	
	Per cent.	Per cent.		Per cent.		Per cent.	Per cent.
The Cleveland Dryer Co., Cleveland, O.—	3.00-4.00	9.00-10.00			11.00-12.00		3.00-4.00
Forest City with Potash.....	1.50-2.50	10.00-12.00			15.00-18.00		
Ammoniated Dissolved Bone.....							
The Columbus Phosphate Co., Columbus, O.—	3.00				25.00		
Capital City Ground Bone.....							
The Continental Fertilizer Co., Nashville, Tenn.—		14.00		1.00	15.00		
Bear High Grade Dissolved Bone.....	2.00	10.00		1.00	11.00		2.00
Bear Beef Blood and Bone.....							
Josiah Cope & Co., Lincoln University, Pa.—	2.00	10.00					4.00
Try Me Bone Phosphate.....	1.00	10.00					3.00
Ammoniated Bone.....		10.00					2.00
Soluble Bone and Potash.....		14.00					
Acidulated Phosphate.....							
The Crocker Fertilizer and Chemical Co., Buffalo, N. Y.—	4.50	8.00		1.00	9.00		5.40
Special Potato Manure.....	1.50	9.00		1.00	10.00		2.16
I. P. Felch Buffalo Fertilizer for Wheat, Oats and Buckwheat							
The Cumberland Bone Phosphate Co., Boston, Mass.—	2.00				14.00		
Extra Fine Ground Bone.....	1.25	8.00		2.00	10.00		3.00
Potato Phosphate.....	2.50	8.00		2.00	10.00		3.16
Superphosphate.....							

The Currie Fertilizer Co., Louisville, Ky.— Acid Phosphate.....	.....	12.00	2.00	14.00	.....
Darling & Company, Chicago, Ill.— Ground Raw Bone.....	4.00-5.00	.....	.....	21.00-25.00	.....
The Detrick Fertilizer & Chemical Co., Baltimore, Md.— Wheat Fertilizer.....	1.25-1.75	10.00-13.00	1.00-3.00	11.00-15.00	.....
Imperial Compound.....	1.00-1.50	9.00-11.00	1.50-2.50	10.50-13.50	1.00-1.50
Louis F. Detrick, Baltimore, Md.— XXtra Acid Phosphate.....	.....	14.00-16.00	0.75-1.00	14.75-17.00	.....
Sockless and Shoeless Phosphate.....	1.25	8.00	3.00	11.00	1.25
Kangaroo Complete Compound.....	2.00-2.50	8.00-9.00	3.50-4.00	11.50-13.00	3.00-4.00
Bone and Potash Mixture.....	.....	10.00-12.00	2.50-3.00	12.50-15.00	2.25-2.50
Orchilla Guano.....	.....	.....	.....	14.00-16.00	.....
Erie City Fertilizer Works, Erie, Pa.— Pure Ground Bone.....	3.50-4.50	.....	.....	22.00-24.00	.....
Standard Phosphate.....	2.00-2.50	8.00-9.00	1.00-2.00	9.00-11.00	2.00-3.00
The Farmers' Union Fertilizer Works, Buffalo, N. Y.— Potato, Tobacco and Truck Manure.....	2.25	9.00	1.00	10.00	4.00
Erie Queen Phosphate.....	.....	11.00	2.00	13.00	.....
The Flower City Plant Food Co., Rochester, N. Y.— Walker's Excelsior Brand.....	7.28	12.00	.....	.....	11.00
L. Frank & Sons, Zanesville, O.— Ammoniated Dissolved Bone.....	2.50-3.00	10.00-11.00	3.00-4.00	13.00-15.00	.....
The Globe Fertilizer Co., Louisville, Ky.— Eagle Corn and Wheat Grower.....	2.00-3.00	8.00-10.00	1.00-2.00	10.00-12.00	2.00-3.00
Potato Grower.....	4.00-5.00	8.00-9.00	1.00-2.00	9.00-11.00	4.00-5.00
Soluble Vegetable Manure.....	3.00-4.00	8.00-9.00	1.00-2.00	9.00-11.00	3.00-4.00
Kentucky Standard Tobacco Grower.....	3.00-4.00	8.00-9.00	1.00-2.00	9.00-11.00	3.00-4.00
Acorn Acid Phosphate.....	.....	10.00	.....	.....	.....

LIST OF COMMERCIAL FERTILIZERS PROPERLY LICENSED—Continued.  
MANUFACTURERS' CLAIMS.

Address of Manufacturer and Name of Fertilizer.	Ammonia.		Phosphoric Acid.				Potash.
			Available.		Insoluble.		Total
	Per cent.		Per cent.		Per cent.		Per cent.
The M. Hamm Co., Washington C. H., O.— Soluble Bone.....	.....		13.00-15.00		1.00-2.00	14.00-17.00	.....
The Hardy Packing Co., Chicago, Ill.— Southern Phosphate.....	.....					12.00	.....
Hardy's Wheat Grower.....	0.50					11.00	2.50
Crop Producer.....	1.00					11.00	1.00
Earl Herrick, Cleveland, O.— Acid Phosphate.....	.....					11.00-12.00	.....
S. M. Hess & Bro., Philadelphia, Pa.— Wheat and Grass Manure.....	1.00		9.00		1.00	10.00	1.00-2.00
J. W. Hunter, Baltimore, Md.— Waring's Q. & L. Ammoniated Phosphate.....	1.50		10.00		2.00	10.00	1.50
The Jaroski Chemical Co., Sandusky, O.— Bone and Phosphate Mixture.....	2.50					15.00	0.50
S. Kaufman & Sons, Indianapolis, Ind.— Halt and Halt.....	3.00	10.00					.....
Special Wheat and Corn Fertilizer.....	3.00	8.00					1.50
Soluble Bone and Potash.....	2.00	9.00					1.50

COMMERCIAL FERTILIZERS.

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James H. Keyser, Heath, O.— Powell's Yellow Bag.....	2.00	8.00	.....	8.00	2.00
Edwin Lamb, Youngstown, O.— Night Soil.....	.....	.....	.....	.....	.....
C. R. Lawwill, Manchester, O.— Farm and Fruit Fertilizer A. Grade..... Farm and Fruit Fertilizer C. Grade.....	7.00-8.00 2.50	16.00-18.00 5.00	4.00 1.00	21.00-22.00 6.00	5.00 3.00
Lister's Agricultural Chemical Works, Newark, N. J.— Ammoniated Dissolved Bone Phosphate.....	2.20-2.50	9.00-10.00	2.00-3.00	11.00-13.00	1.50-2.00
The Loudenback Fertilizer Co., Urbana, O.— Ammoniated Bone.....	2.50-3.00	10.00-11.00	1.00-2.00	11.00-12.00	2.50-3.00
Louisville Fertilizer Works, Louisville, Ky.— Special Corn and Tobacco Grower.....	1.00-2.00	8.00-9.00	1.00-2.00	8.00-11.00	1.50-2.50
Geo. W. Mace, Greenville, O.— Tip Top Superphosphate.....	.....	10.00	2.00	12.00	.....
The Marietta Bone and Phosphate Co., Marietta, O.— High Grade Superphosphate..... Bone and Animal Tankage..... Ammoniated Bone with Potash..... Garbage Tankage and Acid Phosphate.....	3.00-4.00 2.00 3.00 1.00	8.00-10.00 8.00 9.00 7.00	2.00-3.00 2.00 3.00 3.00	10.00-13.00 10.00 12.00 10.00	1.50 1.00 1.50 1.00
The Milsom Rendering & Fertilizer Co., Buffalo, N. Y.— Lawn Fertilizer..... Onion Special.....	2.90-4.00 4.85-6.07	9.60-10.60 7.00-8.00	9.60-10.60 1.00- 2.00	19.20-21.20 8.00-10.00	1.80- 2.80 9.00-10.00
Niagara Fertilizer Works, Buffalo, N. Y.— Triumph..... Ground Bone Meal.....	3.00 2.50	8.00	1.00	9.00 25.00	2.16 .....
The Northwestern Fertilizing Co., Chicago, Ill.— Dissolved Bone Phosphate..... Twenty-Six Dollar Phosphate.....	1.50-2.00 2.00-2.50	11.00-13.00 6.00- 9.00	2.00- 3.00 2.00- 3.00	13.00-16.00 8.00-12.00	..... .....

LIST OF COMMERCIAL FERTILIZERS PROPERLY LICENSED—Continued.  
MANUFACTURERS' CLAIMS.

Address of Manufacturer and Name of Fertilizer.	Ammonia.		Phosphoric Acid.				Potash.	
			Available.		Insoluble.		Total	
	Per cent.		Per cent.		Per cent.		Per cent.	
The G. Ober & Sons Co., Baltimore, Md.— Farmers' Standard Ammoniated Phosphate..... Dissolved Bone Phosphate and Potash.....	2.00-2.50 .....	9.00-11.00 11.00-13.00	2.75- 3.50 2.00- 3.00	11.75-14.50 13.00-16.00	2.00-3.0 2.00-3.00	2.00-3.0 2.00-3.00	2.00-3.0 2.00-3.00	
The Ohio Farmers' Fertilizer Co., Columbus, O.— Improved Wheat Maker.....	0.50	8.00	1.00	9.00	2.50			
The Pacific Guano Co., Boston, Mass.— Pure Bone Meal.....	3.00	.....	.....	20.00	.....			
The Packers' Fertilizer Association, Chicago, Ill.— Soluble Phosphate.....	.....	11.00-12.00	2.00- 3.00	13.00-15.00	.....			
The Pittsburg Provision Co., Pittsburg, Pa.— Crescent Butchers' Ground Bone..... Pure Bone, with Potash..... Keystone Fertilizer..... Guano Fertilizer..... Acid Phosphate.....	3.50 3.50 2.50 2.50 .....	..... 13.00 10.00 9.00 14.00	..... 3.00 3.00 3.00 2.00	16.00 16.00 13.00 12.00 16.00	..... 3.25 1.50 ..... .....			
The Planters' Fertilizer Co., Carrollton, O.— Acid Phosphate.....	.....	10.00	.....	.....	.....			

COMMERCIAL FERTILIZERS.

<b>The Queen City Fertilizer Co., Cincinnati, O.—</b>					
Accidulated Bone Meal.....	4.00-5.00	7.00- 8.00	7.50- 8.00	14.50-16.00	.....
Bone Phosphate.....	3.00-4.00	9.00- 9.50	4.00- 4.50	13.00-14.00	2.75-3.25
<b>The Ralsin-Monumental Co., Baltimore, Md.—</b>					
Ammoniated Alkaline Phosphate.....	2.00	8.00	1.00	9.00	1.00
10 per cent. Phosphate.....	.....	10.00	1.00	11.00	.....
<b>Nicholas Rassel &amp; Co., Toledo, O.—</b>					
Mat nee Valley Fertilizer.....	4.80	6.45	4.22	10.67	0.68
Pure Ground Bone.....	6.50	4.01	17.10	21.11	0.93
<b>Reed &amp; Roepke, Akron, O.—</b>					
Farmers' Friend—Meat, Bone and Potash.....	.....	.....	.....	.....	.....
<b>John S. Reese &amp; Co., Baltimore, Md.—</b>					
Challenge Crop Grower.....	1.00	8.00	1.00	9.00	2.00
Half and Half.....	1.00	8.00	1.00	9.00	1.00
<b>John Ruehle, Defiance, O.—</b>					
Defiance Meat Fertilizer.....	1.00-2.00	4.00- 5.00	2.00- 3.00	6.00- 8.00	1.00-2.00
<b>The St. Louis Sanitary Co., St. Louis, Mo.—</b>					
The Daisy.....	2.00-3.00	8.00- 9.00	1.50- 2.00	10.00	1.00-1.25
The Broadax.....	3.50-4.50	5.00	1.50- 2.00	6.50	0.50-1.00
<b>The J. &amp; F. Schroth Packing Co., Cincinnati, O.—</b>					
Schroth's Special.....	2.00	7.00	3.00	10.00	1.00
<b>The Scientific Fertilizer Co., Pittsburg, Pa.—</b>					
Corn and Grain.....	2.00-3.00	7.75- 8.50	1.25- 1.50	9.00-10.00	2.00-3.00
Economy.....	2.50-3.50	7.50- 8.00	1.50- 2.00	9.00-10.00	4.00-5.00
Potato.....	3.50-4.50	7.50- 8.00	1.50- 2.00	9.00-10.00	6.00-7.00
Pure Raw Bone Meal.....	4.00-5.00	.....	.....	22.00-25.00	.....
Bone and Meat.....	4.00-5.00	.....	.....	13.00-15.00	.....
Bone, Meat and Blood with Potash.....	4.00-5.00	8.00- 9.00	1.25- 1.50	9.00-10.00	8.00-9.00
<b>Sheldon &amp; Co., East Buffalo, N. Y.—</b>					
Truckers' Manure.....	4.00-5.21	8.00- 9.00	1.00- 2.00	9.00-11.00	7.00-8.00
Superior for All Crops.....	2.50-3.04	9.00-10.00	1.00- 2.00	10.00-12.00	2.00-3.00
Grass and Grain.....	1.65-1.82	8.00- 9.00	1.00- 2.00	9.00-11.00	4.00-5.00

LIST OF COMMERCIAL FERTILIZERS PROPERLY LICENSED—Concluded.  
MANUFACTURERS' CLAIMS.

Address of Manufacturer and Name of Fertilizer.	Phosphoric Acid.				Potash, Per cent.
	Ammonia. Per cent.	Available.	Insoluble.	Total	
		Per cent.	Per cent.	Per cent.	
Emery J. Smith & Co., Columbus, O.— Ammoniated Bone and Potash..... Acid Phosphate.....	1.00 ..... .....	..... ..... .....	..... ..... .....	11.00 12.00	1.00 ..... .....
The Southeastern Fertilizer Co., Cleveland, O.— Farmers' Bone Black Fertilizer..... Farmers' Bone Phosphate..... Farmers' General Crop Phosphate..... Farmers' General Crop Phosphate and Potash.....	2.00-3.00 1.00-2.00 ..... ..... .....	8.00-10.00 10.00-12.00 10.00-12.00 8.00-10.00	2.00- 3.00 2.00- 3.00 2.00- 3.00 4.00- 5.00	10.00-13.00 12.00-15.00 12.00-15.00 12.00-15.00	1.08-2.16 1.08-2.16 ..... 1.00-2.00
The Springfield Fertilizer Co., Springfield, O.— I. X. L. Bone.....	2.25 .....	..... .....	..... .....	11.45	..... .....
The J. L. & H. Stadler Rendering & Fertilizer Co., Cleveland, O.— Excelsior Bone Meal.....	2.86 .....	3.92	10.58	14.50	..... .....
R. Stephens & Co., Ashtabula, O.— Buncombe Fertilizer.....	2.50 .....	13.12	13.11	26.23	0.23
Strecker Bros., Marietta, O.— Pure Ground Bone..... Climax Phosphate..... Acme Phosphate..... Dissolved Bone Phosphate.....	4.00-5.00 1.50-2.50 1.00-2.00 ..... .....	9.00-12.00 8.00-10.00 12.00-16.00	2.00- 3.00 2.00- 3.00 1.00- 2.00	20.00-24.00 11.00-15.00 10.00-13.00 13.00-18.00	..... 3.00-4.00 1.00-2.00 .....

The Tennessee Chemical Co., Nashville, Tenn.— Critchfield's Wheat and Grass Phosphate..... *Ox Brand Guano.....	..... ..... .....	11.00 14.00-16.00	1.00	12.00	1.08
The I. P. Thomas & Son Co., Philadelphia, Pa.— Grain and Grass Grower.....	..... .....	10.00	.....	.....	2.00
The Tygert-Allen Fertilizer Co., Philadelphia, Pa.— Star Soluble Bone and Potash..... Standard Bone Phosphate..... Ammoniated Bone Phosphate..... Dissolved Bone Phosphate..... Star Bone Phosphate..... Prairie Bone Meal..... Allen's Special Brand Potato Manure.....	..... 2.00 1.00 ..... 2.25 3.00 2.50	10.00 8.00 8.00 14.40 8.50 ..... 6.40	1.50 2.00 1.00 1.00 2.00 ..... 2.00	11.50 10.00 9.00 15.00 10.50 18.00 8.00	2.00 2.00 1.00 ..... 2.50 ..... 6.00
Walker, Stratman & Co., Pittsburg, Pa.— Grain King..... Bone and Meat..... Semi-Acidulated Bone, Meat and Blood with Potash.....	1.00-2.00 4.00-5.00 4.00-5.00	8.00- 9.00 ..... 8.00- 9.00	1.00- 1.25 ..... 1.25- 1.50	9.00-10.00 13.00-15.00 9.00-10.00	4.00-5.00 ..... 8.00-9.00
The Walton Fertilizer Co., Cleveland, O.— Diamond Cereala Bone Black and Potash..... Pure Bone and Potash.....	..... 2.00	13.00	2.00	15.00 11.50	3.00 2.00
M. E. Wheeler & Co., Rutland, Vt.— Fruit.....	.....	10.00	2.00	12.00	8.00
A. H. Wilking, Beaver, O.— The Grain and Grass Grower.....	1.00-2.00	8.00-10.00	2.00- 3.00	10.00-12.00	2.00-3.00
The Zell Guano Co., Baltimore, Md.— Ammoniated Bone Superphosphate..... Economizer..... The Little Giant..... Dissolved Bone Phosphate and Potash.....	2.50-3.50 1.00-2.00 1.00-2.00	8.00-10.00 9.00-11.00 8.00- 9.00 12.00-14.00	2.00- 3.00 2.00- 3.00 2.00- 3.00 2.00- 3.00	10.00-12.00 11.00-13.00 10.00-12.00 14.00-16.00	2.50-3.50 1.00-2.00 1.00-2.00 1.00-2.00

\* Sample found but too late to be analyzed for the report.



## FERTILIZER LAW.

REVISED STATUTES OF OHIO.

To regulate the Manufacture and Sale of Commercial Fertilizers.

**SEC. 4446a. [How package containing commercial fertilizer to be marked.]** Any person or company who shall offer, sell or expose for sale in this State, any commercial fertilizer, shall affix to every package, in a conspicuous place on the outside thereof, a plainly printed certificate stating the number of net pounds in the package sold or offered for sale, the name or trade mark under which the article is sold, the name of the manufacturer and place of manufacture, and a chemical analysis stating the percentage of nitrogen, or its equivalent in ammonia, in an available form, of potash soluble in water, and of phosphoric acid, in an available form (soluble or reverted) as well as the total phosphoric acid.

**SEC. 4446b. [Person offering same for sale to deposit sample with Secretary State Board of Agriculture.]** Before any commercial fertilizer is sold or offered for sale, the manufacturer, importer, or party who causes it to be sold or offered for sale within the State of Ohio, shall file with the Secretary of the Ohio State Board of Agriculture, a certified copy of the certificate referred to in Section One [4446a] of this act, and shall deposit with said Secretary, a sealed glass jar, containing not less than one pound of the fertilizer, accompanied with an affidavit that it is a fair average sample.

**SEC. 4446c. [Manufacturer, importer, or agent to pay license.]** The manufacturer, importer or agent of any commercial fertilizer, shall pay, annually, on or before the first day of May, a license fee of twenty dollars on each brand, for the privilege of selling or offering for sale within the State, said fee to be paid to the Secretary of the Ohio State Board of Agriculture; provided, that whenever the manufacturer or importer shall have paid the license fee herein required, for any person acting as agent for such manufacturer or importer, such agent shall not be required to pay the fee named in this section.

**SEC. 4446d. [Analysis to be made by Secretary State Board of Agriculture.]** All analyses of commercial fertilizers sold within the State shall be made by or under the direction of the Secretary of the Ohio State Board of Agriculture, and paid for out of the funds arising from license fees, as provided for in Section Three [4446c]. At least one analysis of each fertilizer sold shall be annually made.

**SEC. 4446e. [Secretary to publish, annually, report of analyses made and fees received.]** Said Secretary shall publish, annually, a correct report of all analyses made and certificates filed, together with a statement of moneys received on account of license fees and expended for analyses, and any surplus arising from license permits shall be placed to the credit of the agricultural fund.

**SEC. 4446f. [Persons selling without complying with foregoing provisions, how punished.]** Any person or party who shall offer or expose for sale, or sell, any commercial fertilizer without complying with the provisions of Sections 4446a, 4446b and 4446c of the Revised Statutes, or shall permit an analysis to be attached to any package of such fertilizer, stating that it contains a larger percentage of any one or more of the constituents named in said Section 4446a than it really does contain, shall be subject to a penalty of not less than two hundred dollars for the first offense, and not less than five hundred dollars for every subsequent offense, to be recovered in a civil action, and the offender, in all cases, shall also be liable for damages sustained by the purchasers of such fertilizers; provided, however, that a deficiency of one per cent. of the nitrogen, potash or phosphoric acid claimed to be contained, shall not be considered as evidence of fraudulent intent.

**SEC. 4446g. [Where suits to recover penalties may be brought.]** Suit may be brought for the recovery of penalties under the provisions of this act in the court of common pleas of the county where the fertilizer was offered for sale, or sold, or where it was manufactured; and all penalties so recovered, shall be paid into the State treasury to the credit of the general revenue fund.

**SEC. 4446h. [Secretary of State Board of Agriculture may select samples to be analyzed.]** The Secretary of the Ohio State Board of Agriculture, or any person by him deputed, is hereby empowered to select from any package of commercial fertilizer exposed for sale in any county in Ohio, a quantity not exceeding two pounds, which quantity shall be for analysis to compare with sample deposited with said Secretary, as provided in Section Two [4446b] of this act, and with the printed certificate found on the given package found on sale.

**SEC. 4446i. [All suits under this act to be brought by Secretary State Board of Agriculture.]** All suits for the recovery of fines under the provisions of this act, shall be brought by the Secretary of the Ohio State Board of Agriculture, in the name of the State of Ohio.

**SEC. 7002. [Fine and imprisonment for violation of provisions of fertilizer law.]** Whoever sells, exposes for sale, or offers for sale any commercial fertilizer without having complied with the provisions of Sections 4443a, 4446b and 4446c of the Revised Statutes shall be fined in any sum not exceeding two hundred dollars, or imprisoned not more than thirty days, or both, and said fine or imprisonment, or both, shall not be a bar to the recovery of the civil penalty provided for by Sections 4446f and 4446g of the Revised Statutes.



PROCEEDINGS  
OF THE  
FIFTY-FIFTH ANNUAL MEETING  
OF THE  
**Ohio State Board of Agriculture,**

HELD IN THE COUNCIL CHAMBER, CITY HALL BUILDING,  
COLUMBUS, OHIO, THURSDAY, JANUARY 11TH, 1900.

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The meeting was called to order at 10:30 a. m. by President L. G. Ely, who announced that Rev. C. L. Winget would open the session with prayer.

PRAYER.

We are grateful to Thee, loving Father, that we are permitted to come together by Thy favor. We acknowledge Thee the giver of every good and perfect gift. We are in Thy hands continually. We should be used of Thee according to Thine own order. We thank Thee that Thou dost rule in all the affairs of men. Thou art the God of the universe. Thou dost give to us the things which we need to help us in the struggles of life, and we know, Holy Father, that Thou hast ordered that men should be workers together with Thee. Thou hast given us the sunshine and the shower; Thou hast given to us the soil that we may till it; Thou hast made it our part to prepare the soil and place the seed, but Thou wilt give the increase. We thank Thee, our Father, that we are permitted to meet here with the sons of toil. We pray that Thou wilt give them wisdom, and make them to understand their calling, that they should come to know the things that are needful and that will be helpful to them in carrying forward the great enterprises to which their lives are committed. Help them to realize the nobility and the honor of labor in their calling and in working with God in developing these things that are for our interest and for our good. Thou hast said "Acknowledge me in all thy ways and I will direct thy paths." Help, we pray Thee, our Father, that these men may understand the many things helpful to them, may know that in God is the great lesson, and from His storehouse comes the great truth that may teach them the art of husbandry. We pray Thee, our Father, that Thou wilt help those who have gathered here to-day in all their deliberations, that out of this shall come greater good than they have experienced in all the past, and broader views of their calling. We pray Thy blessing upon them and theirs as they are deliberating, and we pray, our Father, that they may go down from here feeling that the day has not been

misspent. Bless the agricultural interests of our country: bless the educational interests which stand in connection with this great work. We pray Thy mercies upon our young men to be trained and drilled for the battle of life. Bless not only our educational institutions, Holy Father, but bless every institution that has for its object the advancement of the interests of our great nation, especially the Commonwealth in which we abide. Holy Father, remember the Chief Magistrate of our great state: direct him in his duty, and labor; and we pray Thee, our Father, bless the Chief Magistrate of our great nation; help him, we pray Thee, in these days of trial and days of great uncertainty and anxiety; may wisdom characterize all that he does and may he do all in the fear of God. And now, our Father, we ask Thy blessing upon this association to-day and upon all who are gathered here, upon all their interests, and may they fight the battles of life so heroically, so faithfully, that they shall all be conquerors in Him who has taught us to call Him our Father and our friend. All this, we ask for Jesus sake. Amen.

President Ely: Before taking up the call of counties I wish to appoint a committee to wait upon Governor George K. Nash and escort him to the room. During the absence of the committee the roll-call can proceed. The chair will ask Mr. Frank Fox, of Hamilton county, Mr. C. Bordwell, of Clermont county, and Mr. C. W. Halfhill, of Mercer county, to wait upon the Governor and escort him to the hall. The Secretary will proceed with the roll-call.

Secretary Miller: Mr. President and Gentlemen of the State Board of Agriculture: I would like to make a little explanation at this time before proceeding with the roll-call, for fear I may forget it later. Quite a number of gentlemen have asked me where the meeting was to be held today and I have replied "In the Council Chamber of the City Hall." "Why," the answer has been, "will the Senate not grant the usual courtesy to the State Board of Agriculture this year?" Most assuredly it would. Members offered to do that, but we have been holding our institute meetings in this room, and no criticism should lie with the Senate because of refusal, because the members even tendered the Senate Chamber, and we told them that we would continue right along here and not interrupt the work of the Senate. I think this is due to the Honorable Senate to make this statement.

Gentlemen, you who answer to the roll-call, please bring forward your reports as your counties are called, that the Secretary may get a record of the delegates present, unless the reports have already been handed in and the names of the delegates recorded, which we have in some cases.

The following delegates answered to the call and were duly recorded:

County.	Member.	Postoffice.
Adams county .....	W. S. Kincaid.....	West Union.
Allen county .....	T. B. Bowersock.....	Lima.
Ashtabula county .....	O. B. Fobes.....	Lindenville.
Athens county .....	N. W. Baker.....	Chauncey.
Auglaize county .....	Perry Focht.....	Unioopolis.
Belmont county .....	A. C. Darrah.....	St. Clairsville.
Brown county .....	J. S. Raney.....	Georgetown.
Butler county .....	J. H. Slade.....	Hamilton.
Carroll county .....	Wm. L. Smeltz, Jr.....	Carrollton.
Champaign county .....	C. H. Ganson.....	Urbana.
Clark county .....	T. L. Calvert.....	Selma.
Clermont county .....	John W. Patten.....	Bethel.
Columbiana county .....	J. W. Hooper.....	Salem.
Coshocton county .....	J. P. Darling.....	Nellie.
Crawford county .....	J. A. McMichael.....	Bucyrus.
East Cuyahoga .....	L. R. Dunham.....	Bedford.
West Cuyahoga .....	Geo. C. Mastick.....	Rockport.
Darke county .....	J. M. Brown.....	De Lisle.
Delaware county .....	A. J. Harter.....	Delaware.
Erie county .....	C. W. Taylor.....	Sandusky.
Fairfield county .....	Daniel Crumley.....	Lancaster.
Fulton county .....	A. F. Shaffer.....	Wauseon.
Gauga county .....	F. D. Hollis.....	Chardon.
Greene county .....	R. E. Corry.....	Yellow Springs.
Guernsey county .....	A. J. Clark.....	Cambridge.
Hamilton county .....	Frank Fox.....	Cincinnati.
Hancock county .....	W. S. Randall.....	McComb.
Hardin county .....	A. G. Ahlefeld.....	Kenton.
Harrison county .....	Oliver Robb.....	Unionville.
Jefferson county .....	I. S. Vale.....	Smithfield.
Licking county .....	Geo. R. Taylor.....	Thornport.
Logan county .....	W. F. Williamson.....	West Liberty.
Lorain county .....	J. L. Reed.....	North Ridgeville.
Lucas county .....	W. W. Farnsworth.....	Waterville.
Madison county .....	L. W. Kilgore.....	Lond on.
Mahoning county .....	N. Newton.....	Boardman.
Marion county .....	W. C. Rapp.....	Marion.
Medina county .....	Hiram Goodwin.....	McIdina.
Meigs county .....	J. L. Carpenter.....	Carpenter.
Mercer county .....	C. W. Halfhill.....	Mercer.
Miami county .....	W. I. Tenney.....	Troy.
Montgomery county .....	J. McLain Smith.....	Dayton.
Morgan county .....	J. G. Walker.....	McConnellsville.
Morrow county .....	J. G. Russell.....	Mt. Gilead.
Muskingum county .....	S. A. Baldwin.....	Zanesville.
Ottawa county .....	John Orth.....	Port Clinton.
Paulding county .....	J. R. Rose.....	Paulding.
Perry county .....	T. J. Tracy.....	New Lexington.
Portage county .....	Wm. Bergis.....	Ravenna.
Preble county .....	Frank Mitchell.....	Paton.
Putnam county .....	A. L. Paul.....	O tawa.
Ross county .....	A. P. Minchell.....	Chillicothe.
Sandusky county .....	Louis Nickel.....	Fremont.
Scioto county .....	W. A. McGeorge.....	Mt. Joy.
Shelby county .....	J. E. Russell.....	Sidney.
Stark county .....	J. R. Beauman.....	Canton.
Summit county .....	G. W. Brewster.....	Akron.
Union county .....	T. P. Shields.....	Walker.
Van Wert county .....	J. S. Stuckey.....	Van Wert.
Warren county .....	Geo. W. Carey.....	Lebanon.
Wayne County .....	J. C. Sidle.....	Blachleyville.
Williams county .....	C. R. Betts.....	Stryker.
Wood county .....	W. A. Matheny.....	Custar.

At the conclusion of the roll call, Hon. George K. Nash, Governor of Ohio, was escorted to the rostrum, when the President of the Board introduced him in the following words:

President Ely: Gentlemen of the Board — I now take pleasure in presenting to the farmers of Ohio, Governor Nash, who will address you.

Governor Nash spoke as follows:

*Mr. President and Gentlemen of the State Board of Agriculture:*

I am informed that I am expected as the Governor of Ohio, to welcome these representatives of the Agricultural interests of Ohio to the capital city of our state. I desire to say that I do this in the most hearty manner possible. I hardly know what I should talk about in making an address of this kind. If I were to make a very short speech, perhaps the best way for me to do it would be to tell you what I know about farming, (laughter), and that, of course, is very little. But I desire to impress upon you the fact that the people of Ohio, and the Governor of our state appreciate the calling and the very large and important interests which you represent. We recognize the fact that the foundation of all other industries in our state and in the country at large, is agriculture.

We know the value of your interests; we know of the immense sums of money that are invested in agriculture; we know how agriculture every year by her products enriches our whole country. While the industry of agriculture is important, as I have stated, of course you recognize the fact, with us, that there are other interests in the state of Ohio that are of very great importance and of very great importance to you as well as to the state. Take our manufacturing interests, for instance. It is important to you that these interests should grow and prosper. It is important that this should be so because the men who are engaged in working in the manufacturing industries and in upholding them are buying and consuming your products. Therefore, it is important to you that our manufacturing interests should be large and prosperous as well as your own. The truth about the matter is that all the industries and all the interests in this great state of ours are so interwoven that one cannot be in a bad condition without affecting all the others. Now, this being true, it occurs to me it is simply the duty of agriculturists, of manufacturers and of merchants, to join hands and at all times do what seems to be for the best interests of all our people.

There is another reason why we appreciate the agriculturists of this country. We know that from the very beginning of our republic they have been the strong men who have upheld our free institutions. In the days of the Revolution our armies were composed largely of people who came from the farms. When danger threatened our country from 1861 to 1865 the very best soldiers who went forth in the armies of the Republic, in behalf of our flag, were the men and the boys who came from our farms. (Applause). In all our history there has been no more patriotic set of men than those who came from the rural districts of this country of ours.

There is another way in which you have been valuable to this great country of ours. It is important that our people should love our laws, that they should uphold our laws, that they should see that our laws are not violated. I venture the assertion that there are no more law-abiding people in the country than the men who are to be found in our rural districts and upon our farms. Another thing that is very important to our country is this, that intelligence should

be spread abroad, and that our religious institutions should be upheld. I do not believe that there is any set of men who have done more to promote our schools and our churches and establish them, not only throughout our state, but throughout our nation than the agriculturists of this country.

Now, gentlemen, I welcome you to the capital of Ohio, as those who come from the very best class of citizenship. I hope you will have a splendid time while you are in Columbus. I hope you will consider measures and reach conclusions which will be very useful to you as a class of our people, and I hope now, in conclusion, that you will all have long, happy lives; that your homes may be peaceful and that everything which you desire as reasonable men may be granted to you. I thank you for your attention.

Hon. L. G. Ely, President of the State Board of Agriculture, then read the following, his annual address:

*Gentlemen of the Ohio State Board of Agriculture:*

It affords me pleasure, after the close of another reasonably profitable year to Ohio agriculture and the agriculture of the nation, to meet in convention the representatives of that interest from the several counties of the state, and extend congratulations for the success that has attended our efforts in growing the crops, in improving our live stock, in contributing to the wealth of the state and in patriotically supporting its government and its institutions. The farmer being the corner stone of the state structure, his success is the success of every industry, and his elevation the elevation of all. His failures and his neglects affect the entire industrial fabric and work injury to every citizen of the commonwealth. It is therefore, the part of wisdom that the representatives of agriculture, from the several counties of the state, meet in annual convention to consider plans and devise means for protecting and advancing whatever possibly pertains to agriculture and to suggest well matured and wise measures for enactment into law, to assist in strengthening and maintaining the great producing industries.

Legislators are generally as eager and earnest in promoting our industries as we are to have them do so, when wise and reasonable measures are presented for their consideration; and I trust the deliberations of this annual session will materialize a great deal of good in the way of suggestions and petitions to the General Assembly now in session.

Some of the most valuable laws, relating to agriculture and agricultural education, now upon the statute books were conceived and formulated in the annual meetings of this body. In the early years of this agricultural work, there was engaged the wise counsel of such stalwart men as Governor Trimble, M. L. Sullivant, M. B. Bateham, J. F. Worthington, Joseph Sullivant, Alexander Waddle, John M. Millikin, Norton S. Townshend, Thomas C. Jones, David Taylor, Nelson J. Turney, James Fullington, Wm. B. McClung, John A. Warder, L. G. Delano, Leo Wertz, and these helped to lay the foundations for many of the industrial structures we have the advantage of today. There are scores of others, dead and living, who have erected and are erecting monuments to their memory that represent the best thought and most able effort in the uplifting of agriculture and the agricultural classes.

To some of the gentlemen whose names I have mentioned, is due, in a large measure the founding of the Ohio State Fair, which has grown to the present large industrial exposition that annually presents its object lessons to the people of the state, an institution which has been such an important factor in disseminating agricultural information and distributing over the state improved breeds of



live stock that have taken the places of scrubs and the chance breeds, causing the state to rank among the important in live stock production of the various breeds and strains.

The pioneers in the State Board of Agriculture builded even more wisely than they knew in establishing a state fair to bring the people together for the exhibition of their products in competitive rivalry, for the purpose of stimulating enterprise and introducing the best productions. From these incipient exhibitions under canvas, and migrating annually from place to place, have grown the magnificent grounds and massive exposition buildings now possessed by the state and serving as a permanent home for the fair in the annual exhibition of the diversified products of, and for, the agricultural industries.

To the earnest efforts and influence of some of the distinguished pioneers mentioned, is due the State University, established as an agricultural college to educate and fit the young men from the farms, to go out as shining lights for leading to higher attainments and better methods in the march of progress, and again, with following workers, the Agricultural Experiment Station, which has served and continues to serve illustrations in practical experiment that are of untold value to us all.

From the deliberations had in the later agricultural bodies and the counsel and co-operation of eminent legislators have been evolved the present successful farmers' institutes, the broad system of crop and stock reporting, the protective inspection of commercial fertilizers and much other advanced work conducted through your Board of Agriculture and its officers, and with which you are all quite familiar. All the work entrusted to your representative board, provided by law, has been faithfully conducted and properly carried out, requiring the constant attention of those placed in charge of the Department of Agriculture, a department of the state government and one of considerable magnitude and growing importance.

Demands upon the Department increase from year to year, and must be met. From this deliberative body, representing the several counties of the state, there should emanate much of the thought and many of the plans to provide ways and means for meeting the demands and thus continue the grand work of our predecessors in all the years that have passed. I trust the work of this meeting will result in great good to all the interests we represent; that the seed sown may bear abundant harvest.

By way of report on the last exhibition I wish to say a few words further with reference to the Ohio State Fair. It is hardly necessary to remind you that Ohio stands among the foremost with respect to agricultural and mechanical exhibitions, having now most excellent grounds and exposition buildings of a substantial character and sufficient for the purposes of the annual exhibitions, with a few notable exceptions, which the Board hopes, with the aid of the General Assembly, to be able to supply before the holding of the next fair. Many very decided improvements were made to the grounds during the years 1898 and 1899, including the erection of live stock buildings, one each for cattle, sheep and swine, with a group of five for poultry. The construction of the live stock buildings is such that the classes are housed and exhibited for adjudication, each in an exclusive building. Ample and commodious stalls and pens are provided, and there are broad aisles throughout each building that visitors may view the stock with the same degree of comfort and convenience that is enjoyed in viewing exhibits in any of the other exposition buildings.

Each building is provided with an exhibition ring in the center and a seated amphitheater above, for the accommodation of persons wishing to witness the judging of animals in the ring. The buildings are well provided with water and light and have rooms and office accommodations. In the upper story of

the cattle building small halls and committee rooms are provided and equipped for the use of associations holding meetings during the fair. This building is two hundred and forty-six feet square and has capacity for about six hundred head of animals. The sheep and swine buildings have each a capacity for about one thousand head of animals. The group of poultry buildings will accommodate fully five thousand birds in coops systematically arranged.

These new buildings were occupied for the first time during the last fair, and were appreciated and favorably commented upon by every live stock exhibitor participating in the show, as well as by all who visited the stock departments. In the matter of live stock exhibiting facilities Ohio has taken a long stride ahead, but, to complete the grand work begun, there should now be provided for the housing and exhibiting of horses a large building, similar in design and construction to the one now provided for cattle. This should be done in justice to the important horse interests, but the Board cannot make the provision unless aided by the state, which aid it is hoped will be extended by the General Assembly at its present session. There are some other buildings and improvements that should be made this year to make the Ohio fair grounds complete for the purposes of the annual exhibitions for many years to come, and which would but add to the wealth of the state and to her importance in the industrial world.

I cannot refrain from referring with pride to the value of property brought into the possession of the state by the establishment of the fair on the present desirable grounds, and almost entirely through the management of your Board, and at very little cost to, or aid from, the state, and the state can now well afford to assist in some further improvements.

Every surplus dollar of state fair earnings has gone into these grounds, and by reason of the vast increase in land values, in the quarter of Columbus occupied by the grounds, the state holds possessions many times more valuable than the original cost. The average price per acre for the land purchased prior to 1898 was \$389.37; adding the purchase of 1898, which was made at a very low figure considering the great advance in values since 1883, and the average cost per acre of the total purchase is \$530.82. The true value of the land at this time is fully \$2,000 per acre, not estimating or considering any of the building improvements which have been placed thereon. At this estimated value, which is a very fair one, the true value of the whole one hundred and fifteen acres would be about \$230,000.00, or an increase above cost of \$169,955.30. This represents the profit realized by the natural increase in the value of the land, and which the state, in addition to original purchase value, has secured through the efforts and management of its Board of Agriculture.

There has been expended on the grounds for buildings and park embellishments to the close of the year 1898, the sum of \$320,786.34; and during the year 1899 an additional sum of about \$27,000.00, making a total up to the present time of \$347,786.34. Adding this sum to the true value of the grounds as acreage, and there is represented considerably above a half million of dollars to the state, truly a good showing for the Board of Agriculture in the management of affairs entrusted to it.

The state fair of 1899 was an able illustration of agricultural expansion and Ohio's great productive resources. The lessons of the exhibition were many and impressive and will serve well the purpose of extending, improving and increasing every interest represented.

For the farmers' institutes now in progress under the management of the Board and the direction of its Secretary, I am proud to report the greatest success, both in interest and attendance. The institutes are increasing in popularity each succeeding year, and farmers are becoming more and more interested

as they realize the great educational work that is being accomplished through this agency, and the good and lasting results that follow in its wake. The trouble with your Board is to meet the demands for farmers' institutes, in fact it cannot, so numerous are the petitions received. As many have been established as can be conducted with the funds at the disposal of the Board, but localities are so desirous of holding institutes that many independent ones are organized and conducted successfully without aid from the Board. in the hope that in another year they may be assigned regularly. Every possible encouragement is extended to these independent movements, as they always tend to arouse local interest in agricultural discussion and help the farmer to help himself.

Two hundred and fifty-six institutes have been regularly assigned for the present season, which opened November 27, and will continue until March 3. There are engaged in the work, as lecturers assigned by the Board, thirty-five gentlemen of known ability and specialists along the lines they are engaged to teach. Their subjects are numerous and, in making up local programs, institute committees have the privilege of selecting those which they deem most desirable for their particular locality, and there is never lack of interest and profit in the discussions brought out.

The work of monthly reporting crops and live stock, as conducted by the Department, is better systematized than ever before and much broader in its scope. covering as it now does not only returns received from the township correspondents, but the reports of assessors, bearing on agricultural products, as returned to the county auditors. With the increased sources of information the Department is enabled to present the most reliable information in the monthly reports published and distributed, and to give the annual statistics much earlier than formerly, all of which is for the benefit of the farming community.

- The Secretary of the Board as Inspector of commercial fertilizers, has succeeded through a great amount of labor, which the work annually involves, in producing results that throw the strongest safeguards about the farmer who purchases, and also the manufacturer of honestly made and claimed goods put upon the Ohio markets. This particular work, placed upon the Secretary by special provision of the statutes, is commended as being properly and carefully done in the interest of all.

Congratulating the farmers of our country upon the improved condition of agriculture, by reason of the increased demand for our products, both at home and in newly opened markets, and at better and more remunerative prices, and upon the bright prospects opening up to the agriculturist for the new year upon which we have just entered, the closing year of the nineteenth century, and with these references to some of the more important work of your Board, I commit the further business of the meeting into your hands, and await your pleasure.

Gentlemen, I thank you for your attention.

At the conclusion of the President's address, and just before retiring from the meeting, Governor Nash said:

Mr. President and Members of the Board — I want to state to you before I leave that I would be very glad to have you call at the Governor's office while you are in the city, and if you do I will take pleasure in welcoming you there and shaking hands with you. (Applause.)

The President: Gentlemen, the next thing in order will be the report of the Treasurer, Hon. H. S. Grimes.

## ANNUAL STATEMENT

Showing the Financial Transactions of the Ohio State Board of Agriculture for the Year Ending December 31, 1899.

The following statement is a summary of the journal and ledger itemized accounts, representing the transactions for the year and the general financial condition of the Board.

Receipts, other than state appropriations, are charged to the Treasurer, and the appropriations to each respective fund. All disbursements have been by orders or checks signed by the President and Secretary.

The balances in each fund at the beginning and close of the year are properly set forth, all of which is respectfully submitted.

H. S. GRIMES, Treasurer.

## RECEIPTS

## FROM STATE APPROPRIATIONS.

## BALANCES FROM LAST YEAR.

In fund for Encouragement of Agriculture .....	\$2,744 73	
In fund for Contingent Expenses.....	1,685 45	
In fund for Crop and Stock Reporting.....	478 00	
In fund for Payment of Bonds and Interest.....	15,150 00	
	<hr/>	\$20,058 18

## STATE APPROPRIATIONS MADE FOR 1899 AND THE FIRST QUARTER OF 1900.

For the Encouragement of Agriculture.....	\$10,000 00	
For Contingent Expenses.....	2,400 00	
For Crop and Stock Reporting Service .....	2,400 00	
For payment of Interest on Bonds.....	4,000 00	
	<hr/>	\$18,800 00

Total from State Appropriations.....		\$38,858 18
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Of which there was lapsed from Appropriation for bonds and Interest by Reason of not being Expended within the Limit of Law Allowed to run, making.....		9,400 00
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Total Available Appropriations .....		\$29,458 18
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## MISCELLANEOUS RECEIPTS.

Charged to Treasurer.

Balance in hands of Treasurer at beginning of year.....	\$6,261 68
From Farmers' Institute Allowance.....	8,174 25
From Fertilizers Licenses.....	12,380 00
From State Treasury to reimburse Bank Funds advanced for Architectural Work .....	700 00
From sale of hay.....	250 65
From sale of old buildings .....	699 01
From sale of horse.....	85 00
From sale of old typewriting machine.....	20 00
From rent of house on grounds.....	60 00

From adjusted fire loss.....	11 00	
From sale of grain and gasoline tank.....	10 50	
From borrowed on the Board's note.....	6,500 00	
	<hr/>	
Total miscellaneous .....		\$35,152 09

## PROCEEDS OF STATE FAIR.

From sale of full admission tickets.....	\$22,002 05	
From sale of children's tickets.....	507 75	
From sale of grand stand tickets.....	4,186 25	
From sale of wagon tickets.....	47 00	
From sale of special tickets.....	71 00	
From sale of privileges.....	2,761 96	
From class entrance fees.....	1,253 16	
From speed entrance fees.....	1,992 00	
From Woman's Department .....	8 00	
From special premium offer.....	100 00	
From rent of private machine buildings.....	170 00	
From contribution by Street Railway Co.....	650 00	
	<hr/>	
Total State Fair .....		\$33,749 17
		<hr/>
Grand total receipts from all sources.....		\$98,359 44

## DISBURSEMENTS.

## MISCELLANEOUS ACCOUNTS.

For old outstanding checks redeemed.....		\$27 50
Bond redemption .....	\$5,000 00	
Expense of members .....	1,378 74	
Express and freight .....	296 50	
Fair ground buildings and improvements.....	27,364 33	
Fair ground, ordinary repairs.....	1,418 35	
Farmers' Institute expense .....	7,909 51	
Fertilizer inspection and analyses.....	4,832 82	
General printing .....	16 75	
General labor and assistance.....	115 02	
General supplies .....	484 32	
Interest on bonds .....	4,750 00	
Office expense .....	3,813 57	
Postage and telegraph .....	1,623 68	
Salary of Secretary .....	2,500 00	
Salary of Assistant Secretary .....	2,100 00	
Salary of Stenographic Clerk.....	900 00	
Salary of Clerk .....	830 00	
Salary of Clerk .....	535 00	
Salary of Janitor .....	227 50	
Salary of Superintendent of grounds.....	600 00	
Salary of Crop and Stock Reporting Clerk.....	900 00	
	<hr/>	
		\$67,596 09
		<hr/>
Total miscellaneous .....		\$67,623 59

## STATE FAIR PURPOSES.

Expense of Horse Department .....	\$324 00	
Expense of Cattle Department.....	129 25	
Expense of Sheep Department .....	90 95	
Expense of Swine and Poultry Departments.....	175 90	
Expense of Machinery Department .....	450 99	
Expense of Farm Product, Fruit and Floral Departments	210 30	
Expense of Mechanics' and Merchandise Departments....	88 00	
Expense of Woman's Department .....	571 55	
Expense of Secretaries' Department .....	289 85	
Expense of Treasurer's Department.....	772 50	
Meals .....	233 13	
Premiums .....	15,662 18	
Refund entrance .....	13 00	
Printing and advertising .....	4,002 29	
Labor and assistance .....	3,572 40	
Material and supplies .....	1,568 08	
		<hr/>
Total State Fair .....	\$28,154 37	
Total disbursements on all accounts as per checks and orders issued .....	\$95,777 96	
From which deduct the outstanding unpaid checks of present year, and there is shown.....	590 00	
		<hr/>
Actual disbursements from all funds.....	\$95,187 96	
Deducting the actual disbursements from the total receipts from all sources, and there is shown a balance cash on hand, all funds .....	\$3,171 48	
		<hr/>
This balance consists of cash in hands of Treasurer.....	\$311 54	
In State Appropriations—		
For Encouragement of Agriculture.....	1,680 50	
For Contingent Expenses .....	802 94	
For Crop and Stock Reporting Service.....	376 50	
		<hr/>
	\$3,171 48	

## LIABILITIES.

For outstanding bonds of old issue, 6 per cent.....	\$10,000 00
For outstanding bonds of new issue, 5 per cent.....	80,000 00
For note of Board to the Hayden National Bank.....	6,500 00
For outstanding unpaid checks of present and former years .....	942 95
	<hr/>
Total liabilities .....	\$97,442 95

## PROPERTY VALUE.

State fair grounds, buildings and improvements, figured at cost, up to the close of 1898.....	\$380,921 04
For buildings and improvements during 1899, there was expended....	27,364 33
	<hr/>
Showing total cost value.....	\$408,285 37
Being in excess of all liabilities.....	310,842 42

The President: The next business in order will be the report of the auditing committee, of which Hon. S. H. Ellis is Chairman.

Mr. Ellis read the following:

*Ohio State Board of Agriculture, Gentlemen:*

The Auditing Committee has performed the duty of examining the financial records of the Board, and begs leave to report that the accounts were found to be complete and correct.

Each item of expense was compared with the voucher and the check or order issued in payment and all found to agree and to be in proper form and fully authorized. All receipts are correctly set forth in the records and the accounts generally are clearly and intelligently recorded.

The financial statement set forth in the journal at the close of the year's accounts is a concise summary of the financial business of the Board and a correct showing of condition at the close of 1899.

The clearness of the accounts and the completeness of all books, vouchers, checks and orders connected therewith enabled your committee to complete the work of auditing without difficulty, and we wish especially to commend the work devoted to the accounts.

S. H. ELLIS,  
B. P. BALDWIN,  
D. J. GREEN.

The President: I desire at this point to announce the Committee on Resolutions. That committee will consist of Hon. J. L. Carpenter, of Meigs county, C. H. Ganson, of Champaign county, and A. L. Paul, of Putnam county. I wish to announce that if any one has resolutions to present to this meeting, that he should present them to the Committee on Resolutions.

Senator Carpenter: If it suits the convenience of the other members of the committee, I believe it would be wise to meet at the office of the Secretary of the State Board of Agriculture immediately after dinner. Possibly it would be a little hard now to state the hour. I see one of the gentlemen present, a member of the Committee, and possibly at the time of the adjournment of this meeting we might be able to fix an hour at which to meet there, and if it suits their convenience we will announce that as the time and place.

The President: The Committee will meet at the Secretary's office about half past one o'clock. And now, gentlemen, the terms of office of two members of the State Board of Agriculture terminate with today, and it will now be your pleasure to make announcements of candidates for election as members of the State Board. I would be glad if every member rising to put in nomination candidates would please give the name of the county he represents and his name, so that the Secretary may get the record correct.

Hon. J. L. Carpenter, of Meigs: I desire to place in nomination ex-Senator Thaddeus E. Cromley, of Pickaway county. Mr. Cromley has always been identified with the agricultural interests of the state.

He was born and reared on the farm where he now resides; was educated in the common schools of his township and the union school of his county and graduated from Kenyon college. Mr. Cromley was four years a member of the House of Representatives, during all of which time he was an ardent, active and valuable friend to the interests of agriculture and aided in the promotion and enactment of much valuable legislation to the agricultural interests. He was the author of the bill that provided for farmers' institutes, and has aided in subsequent amendments to the original law. He also aided materially in the bill that provided for making the office of dairy and food commissioner elective, and during his four years of service in the Senate afterwards he aided in session of the legislature. His efforts in behalf of these interests are Agriculture, and Chairman of the Committee on Finance at the last session of the legislature. His efforts in behalf of those interested are too well known to most of the farmers of the state to need any elaboration. Mr. Cromley is an honorable gentleman, a good business man, a man in the prime of life and robust manhood. If you should elect him to membership you will put a man on the board, of ripe experience, and a thorough and courteous gentleman.

Mr. G. W. Brewster, of Summit county: I desire to announce the name of Albert Hale as a candidate for re-election. It is unnecessary for me to go into any extensive remarks. Mr. Hale is too well known to need any encomiums from me.

Mr. W. I. Tenny, of Miami county: I wish to place before this meeting the name of a gentleman who a year ago was a comparative stranger to the majority of the members of this body, but at that time his name was placed in nomination for membership upon the state board, and he made an active canvass. He came out a close second in the race and felt from that encouraged to try again. He is a young man, earnestly engaged in the business of agriculture, and while he has not had that extensive experience that seems important to be brought before this body, I feel that it is our duty to place some young men engaged in agriculture upon this board. I think they need that kind of encouragement. He is and has been for several years a member of the agricultural society in the county in which he lives, and has been president of the board for the past two years, and I think I can assure the delegates that if T. L. Calvert, of Clark county, should be elected a member of this board they will make no mistake in placing him there. I believe that he would be an effective worker.

Mr. W. W. Farnsworth, of Lucas county: I wish to present for the consideration of this board the name of Seth H. Ellis, of Warren county. Mr. Ellis for nearly three decades has been at the head of one of the strongest farmers' organizations of the state; his services have been given by voice and pen in every county in the state, and at farmers' institutes; he has worked in season and out of season. His influence



has been used wisely and well ; it has been used in favor of local agricultural organizations ; it has been used in favor of the State Fair, of which also we are justly proud. Mr. Ellis is too well known to you all for me to elaborate upon his record ; it is an open book that all who run may read. He has served one term on the state board ; he has been tried and found able and competent and I ask you to return him to that position which he has filled so well.

Mr. C. W. Halfhill, of Mercer county : I desire to present the name of a gentleman who is not a stranger to you ; who has been in your meetings for several years and who was a candidate last year. I present the name of Mr. L. R. Dunham, of Cuyahoga county. Mr. Dunham is an active Fair worker, and while it is all right to have this rich business and legislative experience and all this other farmers' experience, it is a good thing to have some good Fair experience, to be a member of the State Board of Agriculture. I present the name of L. R. Dunham.

Mr. T. P. Shields, of Union county : I rise to second the nomination of ex-Senator Cromley, and I heartily endorse the eulogy passed upon him by ex-Senator Carpenter, to whom the character and services of Mr. Cromley are well known. I heartily endorse every word, and I hope he will be elected to the Board.

Mr. George C. Mastick, of Cuyahoga county : I desire to second the nomination of Mr. L. R. Dunham.

Mr. William Bergis, of Portage county : I desire to second the nomination of Mr. Albert Hale. We all know him and you will make no mistake if he is elected to the board.

Mr. J. G. Russell, of Morrow county : I rise to second the nomination of Mr. Ellis. It has been an established precedent here to give a member a second term, and I do not see any reason why this body should not give Mr. Ellis a second term ; therefore, I second his nomination.

Mr. R. E. Corry, of Greene county : Mr. President, I move that we enter into this election immediately after dinner.

The Secretary : The program has been arranged and by long established precedent the election has been fixed for the evening.

The President : Gentlemen, we have a program that has been prepared and the election would certainly encroach upon the program for this afternoon. I hear no second.

The motion was seconded by several gentlemen.

A member : It has been the custom, as we all know, to hold this election in the evening, but a great many members want to get away during the afternoon and evening. One of the important duties of this meeting is the election of members of the state board. We come here and listen to papers and discussions and essays by able men, which are all very entertaining and very nice, and leave the important part of it until the last hour, when a great many people are obliged to go home or else stay over. Now, I see no reason, only that this has been the cus-

tom, why this election cannot be held this afternoon, and while I second Mr. Corry's motion, I suggest that it be made a special order for two o'clock this afternoon. After the election is over we can listen to the papers.

Senator J. L. Carpenter, of Meigs county: I rise to a point of order. It occurs to me that, the program having been established and laid down for the work of the meeting, a motion of this kind cannot be entertained. If it is entertained, I maintain that it can only be done by unanimous consent, for it is a violation of the established rule of the organization. If it is desirable to change the rule, and I know there are some reasons why it might be changed, it seems to me it is a proposition that should affect next year's election and not this. It seems to me a motion would be in order to change the program for another year, but I do not think it is at this time.

Mr. W. I. Tenney, of Miami county: That may be true, but we fail to discover the importance that there is in ironclad rules governing it. Of course the program has been prepared, but we felt it was a little like the order of our Fairs, we reserved the right to change them, and if it was taking advantage of any societies that expected to be represented and vote, I should feel, like the gentleman who has just taken his seat, that it ought not to take effect today, but we are all here today, and, as Mr. Halfhill has well said, many would like to get away for the evening; the exercises for the election would not probably last more than twenty minutes, and if they stay this evening they will have to stay until tomorrow for what could be done in a few minutes. I certainly, if the motion is decided to be in order, am in favor of it, and would like to see it made a special order this afternoon. We could hold this election at half past two and it would not occupy more than fifteen or twenty minutes.

Mr. H. S. Grimes, of Scioto county: The gentlemen seem to lose sight of the fact that these programs were prepared several weeks ago and have been sent out broadcast over the country, and I know of one delegate that will not be here until 2:30 this afternoon. He is entitled to as much consideration as the gentlemen already here. He would have been here sooner if he had known the election would have been at two o'clock. Now then, the question comes up, is it not doing the gentleman who will likely be here later an injustice to change this election? I see that no doubt it would be a good thing. As it is it keeps men over night here in Columbus who could get away and go home. I would be heartily in favor of passing a resolution in proper shape to take effect next year, but I think it would be an injustice to some coming here late and others who have business perhaps this afternoon and will not know of this change. I do not think it is practicable. I think the gentleman's point of order is well taken.

Mr. G. W. Brewster, of Summit county: As has been stated by a number of gentlemen, there are a great many of us who want to go home this evening. There are a great many who cannot go home this evening if we wait until half past seven o'clock tonight. Any deliberative body has the right to make its own rules or change rules in use before. This body has a right to call the election at one, or two or half past two, to suit its own convenience. If the members of this body wish to hold the election at two o'clock they have a right to do so. I think that the proper time for holding this election is when the members, or a great majority of them, can be here and take part in the election. At the present time there are at least one-third, I should say, of the members of this convention, who, if the election is laid over until after supper, will be compelled to go home without taking part in it. Proxies cannot be voted, as decided last year, therefore the proper thing for this Board to do, it seems to me, is to place this election at a time at which the members assembled here, as they are now, can come in and intelligently cast the vote of their societies for the persons they see fit for members of the state board. Therefore, I second the motion to make this a special order for two o'clock this afternoon.

Mr. Halthill: I am surprised that that gentleman should rise to a point of order, a man who has served in the legislature, and almost every day sees things taken out of order and made a special order for a certain day at a certain hour. There is no question in my mind but that it was established for a purpose and has served that purpose in years past.

Mr. Carpenter: The gentleman may be surprised. He has a right to be surprised, but I never knew a legislative body to hold that one had any right to take any bill or proposition out of its order, when it was in regular order of business, on a majority vote. I am aware that parliamentary rules are flexible to this extent; you can do almost anything by unanimous consent, and there are certain other things that you can do by a two-thirds vote, but I never knew any man to contend that a proposition can be taken out of its order by less than a two-thirds vote. But I maintain that if you have a right to change the time from seven o'clock to two o'clock you have a right to change the day; and if you were to change the day, how are members to know when to be here to act upon the proposition? I do not believe this a wise policy; I do not believe that this body has a right to do it, but I do admit that they can do it by unanimous consent. I do not think they have a legislative right to do it otherwise. I am aware that this body has no formulated rules for legislative practice, but I understand this is a legislative body and I understand that we are governed by the general parliamentary law and such rules and regulations as would govern like bodies, and I believe it has been the practice in Ohio in all bodies that have no rules of their own, to be governed as nearly as practicable by the rules governing the legislature of the state. Now, gentlemen, I do not see that this is going

to affect the election of this man or that man, but when you talk of getting through with this election in twenty minutes, I am not quite sure you will get through in twice twenty minutes. If you do you will beat all records. We have a program for the afternoon, and distinguished men are invited to come here—Dr. Thompson and others—and make addresses. Possibly you would deprive us of their lectures entirely. They are business men and it seems to me this is impracticable and a dangerous innovation, and yet I do sympathize with the proposition to change the hour, but I suggest that it be arranged to change for the next annual meeting. There will be no more inconvenience suffered at this meeting than at former meetings.

The President: It seems to me that this discussion has continued long enough. The hour for the election of members of this board has been fixed by the body itself, through its representatives. Every man knew before he came to Columbus the hour that the election would take place, and knew the hour that each particular part of the business of the meeting would take place. Now, it does seem to the chair, to say the least, that it would be throwing the business of the meeting into terrible confusion to attempt to change the order of business, and the chair will hold that it cannot be done.

Senator Carpenter: I move that this body do now recess until two o'clock. Carried.

The President: The board will now take a recess until two o'clock. p. m.

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### AFTERNOON SESSION.

The President called the convention to order promptly at two o'clock, pursuant to adjournment, and announced an address by Mr. S. H. Ellis, subject, "A glance at some of the conditions necessary to continually maintain and successfully carry on an annual state agricultural fair."

Mr. G. W. Brewster: Mr. President, I move you that the rules and order of business be altered and changed and that we now proceed to the election of two members of the state board of agriculture.

The Chair: The motion is out of order and cannot be entertained. Mr. Ellis will proceed with his address; whereupon Mr. Ellis delivered an address—subject heretofore given.

The President: The next address upon the program is by Mr. Norman J. Colman, on the subject "How shall we maintain the fertility of the soil?" Mr. Colman is unavoidably absent and we will now listen

to an address by Hon. J. H. Brigham, Assistant Secretary of Agriculture of the United States.

Colonel Brigham then addressed the meeting as follows:

#### AGRICULTURAL PROGRESS DURING THE LAST THREE DECADES.

Within the last twenty or thirty years great progress has been made in the agriculture of this country, both in science and practice. To this advancement the Department of Agriculture has contributed in no small degree. Before the Civil War the work of the government in aid of agriculture was very limited, occupying a small space in the Department of the Interior. In 1862 Congress passed a bill creating an agricultural department as an independent organization. The total annual expenditure for maintaining the Department at that time did not exceed \$20,000. Today it employs nearly 3,000 persons and requires an appropriation of more than \$3,000,000 annually.

It was elevated to an executive department in 1889, when its work had grown into thirteen divisions. At present there are twenty divisions including the Weather Bureau, which was transferred from the War Department to the Department of Agriculture in 1891.

The advancement of agriculture is especially shown in the progress made in checking and eradicating contagious diseases among our farm animals and in the discovery of remedies therefor. When in 1894 the cattle raisers of the country, having become alarmed over the rapid spread of pleuro-pneumonia and Texas fever, demanded that some steps be taken by the government, Congress passed a bill creating the Bureau of Animal Industry. The Bureau began its work by the study of means and methods for eradicating the disease. The "stamping-out process" was decided upon as the most efficacious, and on March 25, 1892, the last case disappeared from the United States. Not a single case has since been reported. Texas fever has been assiduously studied, and while no remedy has been found, partial success has been accomplished by dipping cattle to destroy ticks, and an effective quarantine has been established which separates the infected areas from non-infected areas. Similar regulations for restricting the spread of sheep scab have been established.

No diseases among domestic animals have worked such havoc as hog cholera and swine plague. It is estimated that Iowa alone suffers to the extent of \$15,000,000 annually. The Bureau has discovered a serum which in herds inoculated has resulted in saving from 75 to 80 per cent. of the herds. In 1896 the Bureau set to work preparing a vaccine which would produce immunity from blackleg, a disease which in some states caused greater mortality than all others combined. In 1898 this vaccine was distributed extensively, and reports covering 127,000 herds of cattle show that the loss of animals after vaccination has been reduced to 0.54 per cent., whereas previous to that time it was about 14 per cent.

The inspection of animals for export is one the most important features of the work of the Bureau. So perfect has this become that it is possible to trace the history of any animal to the farm whence it came. In 1898 there were 418,694 cattle inspected and sheep to the number of 174,000. The establishment of quarantine stations at the principal sea ports of this country has resulted beneficially, and the inspection of vessels engaged in transportation of livestock has caused a reduction in the insurance rates on cattle from \$8 to \$1 per head.

The work of general meat inspection has grown wonderfully in the nine years of its existence. In 1892 the number of animals inspected before slaughter was 3,809,459; in 1899 it was 34,405,973. The microscopic inspection of pork has increased from 38,152,874 pounds in 1892 to 108,928,195 pounds in 1899.

## EXPORTS.

Twenty years ago our agricultural exports were valued at \$550,000,000. At present they are close to \$850,000,000, an increase of \$300,000,000. The extent of this development can be better appreciated when it is remembered that our home requirements have been increased by the addition of 30,000,000 people, who have also been supplied.

It is in the livestock products that our exports have shown the principal gains. Breadstuffs were exported almost as extensively twenty years ago as at present, as was also tobacco. Cotton is sent abroad in larger quantities than formerly, but for several years past the reduced price left little increase in the total value. With present good prices the value will show great increase. Meat exports rose in value from \$125,000,000 twenty years ago to about \$175,000,000 in 1899, a gain of \$50,000,000. Our shipments of live animals increased from \$10,000,000 to nearly \$40,000,000. This gain suggests greater possibilities in live stock exportation under the improved transportation facilities of the present day. Our exports of fresh beef increased from \$5,000,000 to about \$25,000,000, and with the further introduction and perfection of refrigeration service on ocean steamships an important development of this export trade can be confidently expected.

## STATISTICAL INFORMATION.

In the year 1870 the number of farms in the United States was 2,660,000; in 1890 it was 4,560,000, and they number today about 5,000,000, with a total acreage of about 700,000,000, an increase of 400,000,000 acres since 1850. The improved acreage has increased from 113,000,000 in 1850 to 353,000,000 in 1890. From 1850 the average size of farms decreased from 203 acres to 137 acres. Medium-sized farms grew in number from 1880 to 1890 at the expense of the smaller and larger farms, which seems to indicate that medium-sized farms operated by the proprietor and his family with improved farm machinery are the most profitable.

Farm tenancy has increased in the last two decades. Many reasons are assigned for this. There has been an increase in the urban population from 3 per cent., in 1790, to 12½ per cent., in 1850, to 21 per cent., in 1870, and over 29 per cent., in 1890. Perhaps it is now 35 per cent. of the entire population, and it is probable that in the drift of farming population to town and city, farm owners have been unable to find purchasers and have leased their farms. It is suggested also that the allurements of town life and industrial occupations have taken farmers' sons away from the farm so that when the owners have died or given up farming many farms have naturally passed into the possession of tenants. Whatever explanation may be made, it is to be borne in mind that the increase of farm tenancy represents an upward movement in the condition and prospects of a large element of our population, which is thus able to acquire farm proprietorship instead of being mere farm laborers.

The real estate value of farms has increased more than ten billion dollars, while the value of farm products and livestock has increased more than five billion dollars. In 1893 there were 16,000,000 horses on the farms of this country, an increase of almost 11,000,000 since 1850. Since 1892 there has been a decrease because of the almost complete extinction of the demand for horses for street car service and the increased application of steam and other power to the transportation of freight. Mules have also increased in number, but for the same reason as that regarding horses, they have decreased within recent years.

The growth of dairy interests is shown by the fact that in 1850 there were 6,000,000 milch cows on the farms and 16,000,000 in 1899, their value increas-

ing from \$280,000,000 to \$474,000,000. Cattle have increased enormously in numbers. There were about 11,000,000 in 1850, and in 1899 there were 28,000,000, their value almost doubling in the last twenty years, being now nearly \$650,000,000. There has been a substantial increase in the number of swine, and notwithstanding some drawbacks, sheep have been increasing in both number and value. The value of all sheep since 1880 has been from \$100,000,000 to \$108,000,000. The value of horses, mules, cattle, sheep and swine has increased in the aggregate from one and a half billion dollars to two billion dollars since 1880.

If an inference may be drawn from the statistics of the Department, it is apparent that milch cows and other cattle have been of more importance to the farmer than other farm animals have been. The average value of milch cows increased more than \$6 in twenty years, and the average value of other cattle increased \$7, while the average value of horses and mules declined, and that of sheep and swine remained stationary, although from 1880 to 1899 sheep increased from \$2.21 to \$2.75 and swine from \$4.28 to \$4.42. The wool product has increased from 36,000,000 pounds in 1840 to 100,000,000 pounds in 1870, and in 1890 it was 165,000,000.

Notwithstanding the growth in the number of creameries, the farm production of butter in 1850, 3,000,000 pounds, was multiplied by more than three in 1890, when the production was one billion pounds. Cheese, on the other hand, has shown a marked decline on the farm, the decline being from 106,000,000 pounds in 1850, to 19,000,000 pounds in 1890.

Domestic fowls, known as chickens, increased more than 150 per cent. from 1880 to 1890; other fowls increased perceptibly, and the number of eggs sold almost doubled.

Indian corn has become a crop of stupendous proportions and now reaches the magnitude of more than two billion bushels annually, or six times the crop of 1840, and three times the crop of 1870. The area devoted to this crop has increased from 34,000,000 acres in 1866, to about 80,000,000 acres in recent years, and the crop increased in value during this time from \$411,000,000 to about \$550,000,000 in recent years.

The wheat crop of the United States for 1899 is reported at 547,000,000 bushels, or 12 3-10 bushels per acre. The production of some of the recent years has been above this figure, but that of 1840 was only 85,000,000 bushels, and that of 1870 only 288,000,000 bushels. The area devoted to wheat has increased enormously, and at present amounts to about 300 per cent. of the acreage of 1866. During this time the value of the wheat crop has increased from \$232,000,000 to \$393,000,000.

In the production of wheat this country leads all other countries. A comparison in 1898 shows that we produced in the United States 675,000,000 bushels, while in France there were produced 372,000,000, and in Russia 405,000,000. In the whole of Asia there were but 421,000,000 bushels grown. This country is also foremost in the production of cotton, which has had a remarkable growth in dimensions, reaching in 1897 nearly 11,000,000 bales, valued at about \$320,000,000. The annual hay crop is now worth about \$400,000,000; the potato crop nearly \$100,000,000, while the crop of oats is worth from \$150,000,000 to \$200,000,000, all showing a decided increase.

The introduction of improved farm machinery has contributed greatly to the ability and facility of farmers in planting and harvesting their crops, and has reduced the cost of production in a great degree.

#### SOILS.

There has been a marked general improvement in the management of soils. They are more intelligently cultivated and in the southern states methods for pre-

venting erosion and washing of lands have been adopted, while in New York, Pennsylvania, Ohio, Illinois, Indiana, Iowa and Missouri there has been an increased amount of land underdrained. Many of the light sandy truck soils of the Atlantic Coast states are being underdrained in order to dry out the lands more quickly in the spring and hasten the maturity of the plants upon which the value of the crop depends.

In Massachusetts, New Jersey, Wisconsin and Florida particularly a beginning has been made in some irrigation plants to control the soil moisture conditions in order to prevent the disastrous effect of drought, and so act as an insurance against loss in the destructive summer droughts that are likely to occur in what has always been regarded as the humid regions. In addition to this the practice prevails in Florida and some other states in the cultivation of pineapples, citrous fruits and tobacco, of shading the land with lath screens, giving half shade, or with canvas to protect the land from undue evaporation, to protect the plants and make the conditions of soil and air more uniform than any other system of cultivation has ever attained.

The most important advance being made now is in the recognition of the influence of the character of the soil upon the distribution and development of the crops. The domains of geology, chemistry, physics and meteorology are being invaded and their methods used in studying the origin of soils and their chemical and physical properties and conditions.

Methods have been perfected for surveying and mapping the areas of the different soil formations and soil maps are now being prepared similar to the geological maps, but showing the area and distribution of the soils. The influence of the chemical and physical properties of the soils thus mapped on the character and development of vegetation is very striking, and is going to be one of the most important helps that the intelligent farmer could wish to have. Many an area will now be relieved of the suspicion of poor farming when it is shown that the conditions are not suited to the crops which have been raised, and many an area so conditioned will be put to better use and find much more prosperous lines in other crops better adapted to the soil.

In the arid West the soil surveys include the mapping of the alkali conditions. The maps show the depth to standing water and the necessity for underdrainage. They show the accumulation and distribution of alkali salts, indicate what correctives, if any, can be used, and show where underdrainage is necessary to reclaim abandoned lands or to protect against further injury from seepage waters and from alkali. The investigations show that much of the trouble in the rise of alkali comes from the seepage from irrigation canals, rather than from over-irrigation by the farmers. The soil investigations in connection with the alkali work are of the greatest interest and of great value to the irrigation farmer.

#### AGRICULTURAL CHEMISTRY.

The science of chemistry has been particularly active in aiding scientific agriculture during the past three decades. Since the time of Liebig the science of agricultural chemistry has been raised on a firm foundation of scientific fact, so that the progress that has been attained is a real one and not simply an evolution of error. The most striking feature of this progress has been the development of artificial fertilization of plants. Practically the whole system of commercial fertilization, as far as its preparation and application are concerned, is the product of the past thirty years. During that period the methods of preparing and applying the vast deposits of phosphates have been discovered and elaborated. Thirty years ago the presence of natural phosphates in the United States was scarcely known. At the present time it is known that this country possesses the most extensive



deposits of natural phosphates in the world and the industry of mining, preparing and marketing these phosphates has become an enormous one. The service which chemistry has rendered to agriculture in this particular can scarcely be measured in dollars and cents. Not only is the present supply of this important plant food, represented by phosphate deposits, secured, but our supply for the future for an indefinite period is assured.

In the same line immense progress has been made in the conversion of waste materials for fertilization purposes. Thirty years ago the value of cottonseed was almost unknown, and quite so for fertilizing uses. Today by reason of chemical research, every ton of cottonseed cake after the expression of the oil, is worth from fifteen to twenty dollars for fertilizing purposes alone.

In like manner the utilization of the waste products of the slaughter house have resulted in the greatest benefit to agriculture. The bones, blood and refuse material of all kinds, with the exception of the oil (which has no fertilizing value) are now carefully preserved and prepared for utilization on the fields.

In this way not only is phosphatic plant food secured, but also that much more important one, nitrogenous plant food. The development and utilization of the potash mines of Germany have been practically all accomplished during the period mentioned. Unfortunately the only source of potash now known for commercial purposes as a fertilizer is the German deposits. While geological conditions would lead us to expect similar deposits in this country, they have not yet been discovered. Fortunately the German deposits are of such magnitude as to give ample assurance even in the far distant future, that the supply of potash will be sufficient to restore the unavoidable losses which take place, even with the most careful cultivation.

Another line in which great progress has been made in the last thirty years has been the discovery and study of the ferments which exist in the soil, through which organic nitrogenous materials are converted into forms suitable for plant food and whereby the free nitrogen of the air is assimilated and prepared for further economical uses. We now know with definiteness the various steps which are accomplished in the destruction of organic nitrogenous matter in the soil, and the conversion of the nitrogen therein contained into nitric acid, the assimilation of the nitric acid by the plant and its evolution into new organic forms, composing some of the most important organs of the plant, suitable in turn for the nutrition of animals. The progress which has been made in this direction alone, if chemistry had done nothing else for agriculture, would be a crowning glory for chemical science.

In the manner of scientific and economical feeding of animals, chemistry has done much to promote the science of agriculture. It has been demonstrated that there is a certain balance in the character of animal food, which when secured gives the greatest efficiency to each component thereof. Chemical investigation has pointed out the character of the ration which should be employed for the various kinds of domestic animals—for those engaged in hard labor, as well as for those simply to be fattened. It is not extravagant to say that where the principles of scientific animal feeding are thoroughly understood and carried out, the cost of animal feeding, for any definite purpose is less than it was thirty years ago by at least thirty per cent. In illustration of this fact, it may be said that in the preparation of animals for feeding purposes, as for instance in the case of a pig, they can be prepared and placed upon the market at a given weight, with about two-thirds of the expense which would have been necessary to accomplish the same purpose thirty years ago. This economy in animal feeding is therefore one of enormous magnitude and value.

In the principles involved in the increasing of soil fertility, great progress has also been made in the time mentioned. So great has been the progress in

this line that thousands of farms which had been abandoned by reason of sterility are now again brought under cultivation and restored almost to their virgin degree of fertility. The rapid exhaustion of the fertility in other soils has been checked by the application of the same principles. It is now certain that the production of immense crops can be continued indefinitely, under the scientific treatment, which the progress of agricultural chemical science has developed, without in any way impairing or exhausting the fertility of the soil. On the other hand, it has been seen that the fertility of a soil which has been partially destroyed is gradually restored under practically scientific treatment, while the fields themselves continue to give greatly increased yields. Thus it is seen that the fear which was formerly entertained by some philosophers of the final exhaustion of the fertility of the earth and the destruction of the human race, by the enforcement of hunger thereby, is entirely groundless.

The progress of agricultural chemistry has touched every department of agricultural science, and the illustrations above given are only some of the more important ways in which the beneficent effects of the progress in this branch of investigation have been manifested.

#### DISEASES OF PLANTS.

Millions of dollars are lost every year in this country through such diseases as the rusts and smuts of cereals and the various blights of fruits, vegetables and other crops. As a result of the investigations by the Department, many of the diseases are now successfully controlled, and the way is opened for farmers and fruit growers to greatly increase the value of their crops at comparatively small expense.

The investigations carried on in connection with this work lead into many side paths. For example, one of the surest ways of overcoming many of the difficulties met in the growth of plants in so extensive and diversified a country as this, is to develop strains and varieties adapted particularly to the region in which they are grown. This may be done by breeding and selection. For example, through the crossing of a hardy, non-edible orange with an edible variety of the South, some forms have been obtained which it is believed will be resistant to the freezes which occasionally sweep over the southern section of our country. If these varieties prove to be all that we confidently expect, the growing of citrous fruits in the United States will receive a great impetus.

Of more direct interest to the people of the Middle West and West is the work on the breeding of cereals, which is also carried on in connection with the work on diseases affecting such crops. Efforts are being made to increase the food value of corn by breeding and already some interesting results have been obtained. The nitrogen content of this crop being variable, it affords good opportunity for developing varieties containing a high per cent. of this important material.

There have recently been collected from Russia and other sections some varieties of wheat which it is believed will prove of great value to various parts of our country. These varieties are to be used principally as a basis for crossing with some of our well-known sorts, and it is confidently believed that the yield of many of the varieties now grown in the South can be materially increased and at the same time forms developed especially adapted to many other sections of the country. Great interest is being awakened in the possibilities of producing varieties for certain purposes, such as for the manufacture of macaroni, cracker-making, etc. It is to accomplish these ends that this work is tending, and at the same time every effort is being made to obtain varieties and forms which will be able to resist unfavorable conditions of climate and the many diseases which are intimately connected with the same.

No part of the country is neglected in this particular kind of work. Investigations are being made in the South for the purpose of improving the many varieties of cotton. Work is under way in the great timber belts for the purpose of obtaining accurate knowledge as to the cause of loss in our valuable timberlands through diseases. Investigations are also being conducted in the cereal work in the Middle West, and on the Pacific Coast extensive operations are under way which have already led to most valuable results, the means for preventing many of the serious injuries to the crops of that part of the country having been pointed out to the growers. Thus the work is constantly tending towards a better system of farming—a system which in time it is hoped will enable more of our people to make two blades of grass grow where only one grows now.

#### EXPERIMENT STATIONS.

It was just about twenty-five years ago when the first regular experiment station was organized in Connecticut. In 1887 there were 17 stations in 14 different states. In that year Congress passed what is known as the Hatch Act, which gave to each state and territory \$15,000 annually for the maintenance of an experiment station, as a part of the agricultural college. During the past ten years more than \$10,000,000 has been spent in maintaining the stations. Of this sum \$7,000,000 was contributed by the Federal Government and \$3,000,000 by the states. For the same period the agricultural products of the United States were valued at \$30,000,000,000. We have therefore spent just \$1 for every \$3,000 worth of product in an effort to improve our agriculture and increase the output. These stations distribute about 5,000,000 copies of publications annually to nearly 500,000 farmers. Separate stations are supported in some of the states so that the total number in the United States, not counting branch stations, of which there are a number, is 54; their total income for the year 1898 was a little over \$1,200,000.

Among other work these stations, especially those east of the Mississippi river, have been engaged in the investigation and inspection of commercial fertilizers under state laws. In the state of New York over 900 brands of fertilizers were examined in 1898, and the station did not then complete its work. In Connecticut the business amounts to a million dollars a year, while in Pennsylvania it is estimated at four millions. The stations have done much to expose extravagant claims for fertilizers, showing the advantage of farm manures, cottonseed, etc., and instructing farmers how to mix their own fertilizers. By testing varieties of grains, vegetables, fruits, etc., the stations have warned farmers against extravagant claims for new varieties. Nursery stock has been examined for fungus diseases and insect pests, and inspections made of seeds, adulterated foods, dairy products, butter increasers and preservatives, concentrated feed stuffs, quack medicines for stock and hog cholera remedies. The stations have also exposed frauds in creamery construction and equipment and dairy apparatus. An important feature of their work has been the investigation of injurious insects and diseases of plants, such as the rot of grapes, apple scab, San Jose scale, gypsy moth, potato rot, potato scab, smuts in wheat and other grains. Through the discovery of an affective curd test the Wisconsin station has provided a means for detecting tainted or defective milk at cheese factories, a matter which caused a loss of from \$100,000 to \$200,000 each summer in Wisconsin alone. This station and the Minnesota station have been largely instrumental in introducing the growing of rape in those states, and it is now grown on thousands of farms.

## ENTOMOLOGY.

In applied entomology, or the work against injurious insects, the past thirty years has been more productive of practical discoveries of great importance than the whole previous history of agriculture.

Aside from the intimate knowledge of the habits and life histories of our insect pests which has been gained during this period, the principal factors in progress have been the discovery of the practical use of arsenical poisons for biting insects, the use of kerosene emulsions for destroying sucking insects, and hydrocyanic acid gas for the destruction of scale insects; not only upon nursery stock but upon orchard trees, and the invention, marketing and practical use of a large number of mechanical devices for the distribution of insecticide mixtures, from the bucket pump and the knapsack pump to the steam or gasoline engine.

Instead of being at the mercy of a host of insect foes whose life round was unknown, as was the case thirty years ago, the farmer and fruit grower have now a fund of exact information, not only as to the habits and potential destructiveness of nearly everyone of these kinds of insects, but as to the best and cheapest mode of killing them or preventing their attacks.

This result has been brought about not only by the entomologists alone, but by the educated and practical farmers, quick to grasp a suggestion and put it to a practical test, and quick to improve upon a hint derived from a knowledge of the exact life periods and habits of their insect foes.

An important feature of work has been the introduction of the Australian ladybird beetle into California for the destruction of the white scale and of the same insect from this country into South Africa and Portugal, where the same marvelous results were brought about. An entomological achievement, which, although it does not refer to the destruction of injurious insects, will still prove of lasting benefit to American horticulture, was the successful introduction from Algeria of the fertilizing insect of the Mediterranean region into California and its establishment in that state, which assures the production of a commercial fig equal in quality if it does not surpass the standard fig of commerce.

## FRUIT INDUSTRY.

The American fruit industry now easily surpasses that of every other country in the world. From only a garden industry it has broadened into a commercial undertaking of great magnitude.

Growers in different localities are devoting themselves more and more to the production of particular kinds of fruit which thrive best with them even though they be thousands of miles from the consumers whom they aim to supply. The most notable instances of this are the pineapple and orange districts of Florida, and the orange and lemon districts of California, the strawberry fields which extend from Florida all along the Atlantic Slope, and supply fruit from January until the middle of July. Successful and profitable shipments of peaches are made from Georgia to points many miles away.

An important factor in this commercial fruit-growing has been the application of artificial or mechanical refrigeration to the preservation of fruits beyond their normal period. There has been marked increase both in the number of varieties planted and the area devoted to fruit culture.

## INTRODUCTION OF NEW CROPS.

One line of investigation which has proved particularly productive of valuable results has been the introduction into the United States of new crops or new varieties of well-known crops, which have added greatly to the pro-

ductive capacity of our present agricultural areas in localities where our common agricultural crops cannot be grown. In 1888 the Department of Agriculture established in the arid region of western Kansas a station for testing crops suited to the conditions of that belt. One of the plants thus demonstrated to be a success was grown last year in the state of Kansas alone to the value of over five million dollars. The Department has imported from Turkestan a variety of alfalfa which promises within the next decade to add millions of dollars annually to the forage-producing capacity of the arid region.

#### FORESTRY.

At no time in our history has the interest in forestry been so general or wide-spread as at present. The government has withdrawn from sale nearly 47,000,000 acres of public land to be held as forest reservations.

#### GRASSES.

In 1851 the hay product of this country is reported to have been 12,839,141 tons, New York state alone producing one-fourth of that amount. The hay product in 1898 reached the enormous amount of 66,000,000 tons. Today the livestock of the country dependent upon grasses and forage plants for their food supply is in round numbers 138,000,000, valued at nearly \$2,000,000,000. This increase in livestock has arisen, not only through the opening of new grazing lands, but through improved systems of agriculture, which have materially increased the forage product of the soil.

#### THE DAIRY INDUSTRY.

Progress in dairying has been equal to that in any other branch of agriculture. In 1865 there were five cheese factories in operation in the state of New York and 1,000 ten years later. In Ohio one cheese factory was started in 1861; in 1874 there were 100, and nearly 500 in 1880. There are now about 3,000 in the whole country, and practically all the cheese of the United States is made in factories. The same general plan was adopted for butter-making, and all now know how common creameries are and how useful in the communities where located. Creameries were first established in New York in 1861; in Ohio in 1865; in Illinois in 1867, and in Iowa in 1871. There are now seven or eight thousand creameries in the United States, and the system is extending rapidly. Not half of the butter of the country is yet made in creameries, but farm dairy butter is mainly consumed locally, so that the creamery grades practically control the large markets. The yearly dairy production of the Union is now estimated as follows:

1,430,000,000 pounds of butter valued at.....	\$257,400,000
300,000,000 pounds of cheese, valued at.....	27,000,000
2,090,000,000 gallons of milk, valued at .....	167,200,000
Grand total .....	<u>\$451,600,000</u>

If the proper feeding value of skim milk, butter milk and whey be added, and the value of the calves dropped yearly, the annual aggregate value of the produce of our dairy cows in America is over \$500,000,000. This is a very conservative estimate and thought by some to be too much so.

Next to the adoption of the factory or associated system, which is of American origin, the one thing which, during recent years, has given the greatest impetus to the dairy industry in this country is the introduction of the mechanical method of skimming, or separating, cream from milk. The centrifugal cream

separator made its first appearance in America in 1879. We are indebted to Europe for this invention, at least as a dairy appliance. It is the only instance in which dairy invention abroad has been notably in advance of the United States. Yet investigations were in progress contemporaneously in this country along the same line, and many of the material improvements in the cream separator have since originated here. The machine has been vastly improved during its twenty years of existence. Besides its economy and its effect upon the dairy labor, the separator almost eliminates the factor of climate in a large part of dairy management, and, altogether has worked a revolution in the industry. Although quite an expensive piece of machinery, its adoption has been so general, especially among creameries, that there are now more than forty thousand cream separators in use in the United States.

Another great dairy invention of the period, is the popular fat-test for milk, being a quick and convenient substitute for chemical analysis. The test-method most generally approved in America, and now also in foreign lands, is that which has become so well known under the name of its inventor, Dr. S. M. Babcock, of Woscinsin. This fat-test of milk has such wide application that it may fairly be questioned whether it is second to the cream separator in advancing the economies of dairying. The percentage of fat being accepted as the measure of value for milk for nearly all purposes, the Babcock test may be the basis for municipal milk inspection for fixing the price of milk delivered to city dealers, to cheese factories, creameries and condensaries, and for commercial settlements between patrons in co-operative dairying of any kind. By this test also the dairy farmer may prove the quality of milk from his different cows and (with quantity of milk yield recorded), may fix their respective value as dairy animals. Cows are now frequently bought and sold upon the basis of the milk scale and the Babcock test. With perfect apparatus, in competent hands, the accuracy of the test is beyond question and it is of the highest scientific value and practical use. It should be noted that although clearly patentable, and offering an independent income through a very small royalty, this priceless invention was freely given to the public by Dr. Babcock.

The advent of the twentieth century will find the dairy industry of the United States established upon a plane far above the crude and variable domestic art of three or four generations ago. The milch cow itself, upon which the whole business rests, is almost as much a machine as a natural product and a very different creature from the average animal of the olden times. Instead of a few homely and inconvenient implements for use in the laborious duties of the dairy, perfected appliances, skillfully devised to accomplish their object and lighten labor, are provided all along the way. Long rows of shining tin pans no longer adorn rural door-yards. The factory system of co-operative or concentrated manufacture has so far taken the place of home dairying, that in entire States the cheese-vat or press is as rare as the hand loom, and in many counties it is as hard to find a churn as a spinning-wheel.

#### THE WEATHER BUREAU.

Its first and most important work is to give to the farmer trustworthy information of coming weather changes with such promptness that it may be utilized in planning operations for the period to which the prediction applies. To do this successfully and economically has been one of the most difficult problems with which the Bureau has had to contend. In the earlier years of the Bureau's existence it had, as now, accurate foreknowledge of coming weather changes, but the means for rapid dissemination of that information, of such immense value to the public, were unsatisfactory and very inadequate. In recent years through the rapid extension of telephone systems, increased telegraph facilities and vastly

improved postal service, the Bureau has been enabled to place its weather forecasts before the public so promptly that all cities and important towns, and a vast number of the smaller towns and villages are now given prompt weather service. So greatly has the system of distribution been extended throughout the country that at this time there are issued and distributed approximately 100,000 weather bulletins daily, a large majority of which go into the smaller towns and villages for the benefit of the agricultural classes.

Besides this daily distribution the Bureau is enabled by its River and Flood service, in times of heavy rains when dangerous stages of water are likely to occur, to inform the sections endangered; and by its timely warnings of threatened overflows, it not infrequently in a single instance saves to the public more than the total annual cost of its maintenance for a period of years.

A scarcely less important work than that of issuing forecasts is the Climate and Crop service in which more than three thousand voluntary observers take daily observations of temperature and record measurements of rainfall, using instruments of the Government standard. The observations are collected at the State centers and utilized in the preparation of monthly weather reviews that are published promptly after the close of each month. By these publications the detailed climatic features of the several states are established and made known to the general public, the information being of value in affording data for studying the meteorological conditions under which crops are grown. The current value of these publications is not only material, but their prospective usefulness will increase as the lengths of the records are extended. There are two prominent features of the Climate and Crop Service of the Bureau; the first has just been mentioned; the second is the collection and publication of information as to the effects of current weather conditions upon crops during the growing season. This information is carefully summarized by the expert at the central station in each State, where a weekly bulletin is prepared and given a wide distribution through the press and otherwise, so that the farmers may keep fully informed as to the progress of crops and farm work in all counties. A summary is telegraphed to Washington from each central station to be utilized in the preparation of the National Climate and Crop Bulletin issued weekly in that city. This Climate and Crop Service of the Weather Bureau should not be confused with the work of another very important part of the Department, viz., that of the Division of Statistics, the duties of which are wholly distinct.

#### INTERNATIONAL DEVELOPMENT.

After having considered the development of American agriculture it will be well to consider it as an international factor. At a time when cities and towns were small and industrial centers few, each city could be provided with its necessary food by the surrounding farms, but with the tendency to build great cities like London, Berlin, Paris and New York, it is a natural result that food stuffs must be transported by rapid transit for long distances in order to supply the great centers of population.

England has so changed from the agricultural to the industrial, that London can no longer depend upon Great Britain for the food necessary for her large population, and hence she turns to the American and Australian farmers for aid. Cattle raised in Texas and the West are killed and dressed in the large abattoirs of Chicago, Omaha, St. Louis and other large American cities; they are rushed to the Ocean "grey-hounds" in New York harbor by specially constructed refrigerator cars and are speeded across to London in refrigerator space in less than eight days. The American farmer thus not only contributes to the greatness of his own country, but also the greatness of large foreign cities like London. Germany too, is rapidly changing from an agricultural to an industrial state and is looking to this country for the food necessary for her own existence and development.

Seeing that competition is constantly growing more keen and may be expected to increase in the twentieth century, our government has within the last few years sent experts abroad to study agricultural conditions in foreign lands, to protect our exports, to find new markets, to procure new seeds, and to act as scientific assistants in the diplomatic corps.

#### AGRICULTURAL ASSOCIATIONS.

Agriculture has been greatly stimulated in every way during the past twenty or thirty years by the earnest work of Granges, Farmers' Institutes, Agricultural Associations and such as the present assembly, and I believe that we should endeavor in every way to increase the organization of such associations.

The agricultural interests cannot be entirely separated from the other great interests of our country; there is a mutual dependence. When labor and capital are fully employed and prosperous, agriculture will be more progressive than when opposite conditions prevail.

We must not, however, lose sight of the fact that we must give especial attention to our own interests. Some of the methods and demands of both labor and capital are inimical to the interests of agriculture, and the farmers must make their power available for self-preservation. We must recognize the fact that neither organized labor nor capital can be depended upon to guard our interests. The time for intelligent, united action on the part of farmers is upon us. If we are neglectful or cowardly, if we hesitate to act promptly in our own interests, we shall not escape the penalty. We must deal with all questions, all parties and all men in a way that will show to all that intelligent farmers know their rights and have the courage and ability to maintain them. There are many existing inequalities and abuses that need our immediate attention, but I shall not take time to enumerate them. Every intelligent man knows of their existence and also knows that the farmers have the power to correct them if it is only made available. I am one of those who have always believed that the agricultural giant would some day realize his power and make such use of it that all would learn to respect his rights and join with him in efforts to secure to all a fair reward for honest toil. I am not discouraged, but I am just a little impatient. If we would continue to prosper and enjoy the fruits of our own industry we must guard well every interest of agriculture. We can not do this without a thorough organization of our forces. There is no excuse for delay.

The President: Is there any discussion upon this paper?

There being no discussion the President announced an address by Dr. W. O. Thompson, President of the Ohio State University.

Dr. Thompson's address follows:

#### A STUDY OF OUR TAXES.

By PRESIDENT W. O. THOMPSON, Ohio State University, Columbus, Ohio.

It is a matter of great satisfaction to the people of our commonwealth to know that during the past decade we have made considerable progress in the matter of adjusting the burdens of taxation. The revenues of the state have increased considerably without putting increased burdens upon the people. There is no prospect that the levy for state purposes will be increased. Indeed, a careful management of the state's revenues with the probable increase that will come from new sources ought to make it possible to reduce the levy for state purposes.

The purpose of this paper is to set forth in a direct and clear way just what



our revenues are and, in a general way, what becomes of them. I shall then attempt to suggest a few points where some improvements could be made with the interests of every one properly cared for.

There is no department of public interest concerning which more unreasonable and hasty statements are made than concerning the whole subject of taxation. People have inherited a notion that taxation is a very heavy burden and unfortunately they have not always investigated enough to know where the burden lies or why it is there. As a matter of fact the state tax of Ohio is not very burdensome to many people; the entire taxation for the general revenue fund is less than the taxes collected by either of our two largest cities—Cleveland and Cincinnati. The burdens of taxation are chiefly local and the responsibility is chiefly local. Men usually assume that the State Legislature is responsible for the whole burden of taxation. It is well to remember that the Legislature is responsible only for legislation that permits the people to vote taxes upon themselves, but the people do the voting and are therefore responsible for their own acts. Let me remind you that the total revenues collected in the state for state, county, municipal and local purposes amount to something over forty millions of dollars annually. The amount of the state taxes from all sources, subject to appropriation by the legislature, is a little less than five millions—that is about one dollar in eight. It should be noted that of the amount named above as state taxes, one mill, or about one and three-quarter millions, constitutes the common school fund, which is paid back to the local counties for education. If we deduct this amount there is but little over three million dollars held by the state for meeting the demands of the sinking fund, the general revenue fund and the University tax. As a matter of fact, scarcely one dollar in ten of the whole amount paid by the people in taxes ever comes under the direct jurisdiction of the state legislature.

This will appear more clearly when we remind you that as against the amounts named above for the year ending in November, 1898, the taxes for county purposes, including the items for the poor, bridges, buildings, roads, debts, et cetera, amounted to about nine and three-quarter millions, or more than double the state taxes. If we deduct the common school fund, which is really a state tax, for local use, the county taxes are three times the state taxes. These county taxes are all provided for by the legislature under the vote and control of the people through their county officers. If these counties get the worth of their money and secure an honest administration, there ought to be no reasonable ground of complaint. If they fail in this, the remedy is at home; there is no necessity of coming to the state legislature for relief, nor should the dissatisfaction caused by purely local conditions be transferred to state officials.

But let us take yet another view. For the same year the taxes for township expenses, including schools, school houses, city, town and village taxes, special purposes and miscellaneous purposes, amounted to nearly twenty-six millions of dollars. It is interesting to note that of this amount about one-tenth, or a little more than two and one-half million dollars, was for special and miscellaneous purposes. It is also worthy of note in passing that the taxes for the four public institutions for higher education—the Ohio State University, Ohio University, Miami University and Wilberforce University, amounted to \$241,567.88, and the township taxes for education amounted to \$10,419,932.49. Add to these two items the state tax of \$1,948,013.07 for the common schools and we have a total tax for education of \$12,410,513.42. That amounts to a little more than a fourth of the total tax and a little less than a third. This amount of twenty-six millions of dollars is so directly and absolutely under the control of local committees that it forms an unanswerable argument for the supreme importance of local government.

Let us put our taxes in another form, that we may see the proportion between local and state taxation. The tax rate for the state is 2.84 mills; this includes: the sinking fund, three-tenths of a mill; general revenue, one and four-tenths of a mill; University fund for the four universities, fourteen hundredths mills; common school fund, one mill. A man who pays tax on five thousand dollars pays to the state fourteen dollars and twenty cents; of this five dollars goes to the common school fund, seven dollars to the general revenue, one dollar and fifty cents to the sinking fund and seventy cents to education.

Now the average rural township will have a tax rate not far from fifteen mills. A man in such a township paying on five thousand dollars would find his taxes to be seventy-five dollars. Of this amount fourteen dollars and twenty cents would be for state purposes; five dollars of it, to be sure, comes back to him for his common school, so that it may be said that nine dollars and twenty cents would be his state tax, including the tax for the support of the several Universities. This, to my mind, makes it clear that the state taxation is not a very serious burden, so far as it relates to our property.

May I inject into this paper a statement, since I am a college man, about our university expenses? You will notice that 2.84 mills is the state tax. Now .14 mill is for university purposes, including the four universities; .10 mill is for the State University, so that a man that pays taxes on five thousand dollars would pay in, as I say, fourteen dollars and twenty cents. He will pay fifty cents a year to the support of the state university, and he will pay twenty cents for the support of the other three. That twenty cents is divided between Wilberforce at Wilberforce, Miami University at Oxford and the Ohio University at Athens.

If now any man is disposed to suggest that there is connected with our revenues a large amount or any amount of extravagance, dishonesty or criminality. I venture to say that a careful investigation of the facts would prove the troubles to be chiefly local. Indeed, I think we owe it to the state to say that it has made a pretty good account of the revenues raised by taxation for state purposes.

I might inject another word here and say that the amount of fraud, dishonesty, and all that, in our taxing system, that is, in the strictly state revenues, is almost nothing as compared with the amount of fraud that is found elsewhere. When you remember what I said a moment ago, that the taxes for general revenue in the state of Ohio are less than the taxes for the city of Cleveland or the taxes for the city of Cincinnati, you can see how the city politician has more opportunity for fraud and dishonesty in connection with taxation than the state officials; and you see what is more than that, that these schemes are worked through the legislatures permitting people to do certain things; municipalities have in them larger opportunity for fraud, dishonesty and theft than is possible in those handling state's revenue, because out of the 40 mills there is less than five that the state has anything to do with whatever.

It may add now to our interest if we look a little further into what the state actually does with the revenues at the disposal of the legislature.

In the first place, the Ohio Penitentiary heads the list. The annual appropriation for this institution is about five hundred and fifty thousand dollars. This is in a measure offset by the earnings, which are carried into the state treasury; for the last year these amounted to nearly two hundred and twenty-six thousand dollars, but even deducting this amount the penitentiary remains the largest money consumer of any public institution in the state.

Next comes the Ohio Reformatory and then the state hospitals, located at Athens, Cleveland, Columbus, Dayton, Longview, Massillon, Toledo and elsewhere. Then we have the boys' industrial school and one for girls. The institutions for the blind, the deaf, the feeble-minded, the soldiers' and sailors' or-

phans and for epileptics, annually call for large sums of money. The appropriations for these institutions amount to a little more than three million dollars. The Board of Public Works expends a considerable sum each year. The legislature costs about one hundred and forty thousand dollars annually. The several state offices aggregate a considerable sum. There are several public enterprises that draw upon the general revenue fund for support. But it is worthy of emphasis here that the bulk of the taxes is spent directly upon our benevolent and charitable institutions. If we add to this the money that may be indirectly charged to this work we see at once that our greatest enterprises are for the poor, the unfortunate, the imperfect and the criminal. It is a case where we that are strong do bear the infirmities of them that are weak and the burden of them that are criminals. For every dollar that the state spends for the higher education of the sound, the healthy and the hopeful, we spend nearly, if not quite, ten dollars upon the unsound, the unhealthy and the hopeless; or if we put it in another comparison, the sum total of all the money spent from all sources on public education of all kinds is about fifty times what we spend upon our public institutions for the unfortunate and criminal classes. I do not know that any man begrudges the money spent upon the unfortunate classes. He may have some dissatisfaction concerning the money spent upon the criminal classes when he considers the causes that produce such criminals, but all must recognize the necessity and the wisdom of doing the right and generous thing in such cases. The growth of the humane spirit among us will not tolerate indifference or negligence. These are the accompaniments of civilization, as we know it. The state must do its full duty.

It is worth while to remark in passing that the unfortunate classes are increasing more rapidly than the criminal classes. Our greatest burdens in the future will probably arise from our care of these classes. A study into the causes of this opens up a sociological question into which I cannot enter, but I may remark that society must by some effective regulation of social conditions protect itself against the increase of the unfortunate and criminal or the burden will become so heavy as to be a serious menace to other classes. A study of our public expenditures inevitably leads one to inquire anxiously what can be done to improve conditions and remove causes.

We may now pass to the question of the source of revenues.

During all our history as a state there have been two chief sources of revenue — real estate and personal property or chattels. For convenience a three-fold division is made and the grand duplicate now shows the following items:

Real estate in cities and villages.....	\$ 645,313,462 00
Real estate not in cities and villages.....	591,598,469 00
Chattel property .....	511,096,768 00
Total .....	<u>\$1,748,008,639 00</u>

Now if you want to get that in mind you will find it not far out of the way to say:

City real estate .....	6
Country real estate.....	5
Personal property .....	5
Total .....	<u>16</u>

Now the total is 16, and you are not far from the just proportion of city real estate, country real estate and the personal property.

This duplicate increases a little from year to year during a decade, but the land appraisement is made once in ten years. It is noticeable that city and village real estate is the largest revenue producer. The evasion of the law in many cases where persons do not report their chattel property makes that source of revenue much less than it ought to be. If such property were honestly returned for taxation the grand duplicate would be much larger and the rate of taxation proportionately lower on real estate of all kinds.

It is to be remembered, therefore, in that connection that the failure to report personal property for taxation, or to have it reported, as the case may be, simply increases the burden of taxation that must come on either real estate on the one side or corporations and franchises on the other. That is to say, the moment that personal property gets out of bearing its just proportion of the taxation, it puts the burden upon some other form of property, and it must fall either upon the real estate or upon sources other than those named in these three lists. It is to be remembered always that a tax tends to depreciate the value of property. This fact makes the speculative element of society invest in forms of property that are sensitive and retiring in the presence of an assessor. Such property is apt to shrink in his presence, if indeed it appears at all. The operation of this species of fraud and dishonesty makes the burden upon tangible property relatively too great. There is no question more perplexing than the discovery of a method of taxation that will make all property bear its just proportion of the expense of civilization.

In this connection it is interesting to note the progress that has been made within the past decade in new sources of revenue.

The Nichols law was a step in a new direction, in that it taxed franchises. Under the Constitution the law is that all property shall be taxed according to its true value in money. The Constitution goes farther and names certain kinds of property, as moneys, credits, investments in bonds, stocks, et cetera. Under the new conditions of business that have arisen since the Constitution was adopted in 1851, the question of franchises came prominently before the legislature. A law was enacted taxing such franchises. The holders of these franchises resisted payment and the validity of the law was tested in the courts. The courts took the eminently just position that a constitution being of the nature of a limitation, does not prohibit the legislature from exercising its power in spheres not designated in the charter of limitation. The Constitution does not grant the taxing power. It does, however, limit the use of the power as specified. This limitation can not be construed as a prohibition in cases outside of the subjects named. There was held to be a clear distinction between a franchise and property as designated in the Constitution. The importance of this decision lies in the fact that it opens the way for the legislature to proceed to levy a tax where there is ability to pay. It has brought a considerable increase in revenue. The Auditor of State reported one year ago an excise tax to the amount of \$558,600. The superintendent of insurance reports fees to the amount of \$131,303.98. In the future we shall find an increasing revenue from such sources.

Recently the Supreme Court has handed down a decision in the telephone cases holding that they are taxable upon a basis of their earning power. This case was brought by an action against the Auditor of Franklin County to test the question whether a telephone should be taxed at the cost or value of property found to be \$3.42, or upon the earning power, which was \$14 for each instrument. Let me say that the ordinary telephone that we have (it was proved in the case) the box, including the transmitter, and the receiver that we hold in our hand, costs \$3.42 for each instrument. Now, these instruments were on an average earning \$14 a year, that is, they were earning about four times what they cost. The question immediately arose whether they should be taxed on what they cost.

or on what they earned. Now, the plea was put up that you tax a horse for what it costs, or a piano for what it costs, or something else for what it costs, and not upon the amount of delight you may get out of it or what it earns. You tax a horse on his value, and this company felt that that telephone instrument should be taxed on what it cost. Well now, upon that the court held in favor of the earning power as a proper basis for taxation. Fourteen dollars is six per cent. upon about \$233. The question was then whether this telephone instrument should be put in for taxation at \$233 or whether it should be put in at \$3.42, and the court held in favor of the higher value. (Applause.) It is to be noted that this decision falls in with the true theory of taxation held for so long. Property is taxed because it is potentially a revenue producer. All tax must eventually be paid out of income. We assess land for taxation with a distinct reference to its producing capacity. The whole question of justice or injustice in taxation between different kinds of property is always discussed with this principle in mind.

The courts of the state, therefore, have come to the defense, if you wish to put it that way, of the principle that the colleges have been teaching for one hundred years, that all revenue must come out of income, and that the income is the real measure of the tax that ought to be put upon anything. Now, upon this question we have differed for the reason that we have grown up under a system that makes it almost impossible to discover revenues or incomes, and because we cannot discover incomes we have found in it a species of double taxation. The question is whether it would not be well to reorganize upon that basis making the income, the earning power of the business to be eventually the thing to be taxed, and if that were tried then the land and the note would be brought upon an equitable basis.

If, now, the new conditions of modern business shall maintain enterprises with large earning capacity or an earning capacity quite out of proportion to the capital invested, as in the case of telephones, there is no good reason why these enterprises so successful financially should not bear an equitable portion of the public burdens. The decision in the telephone cases will not only bring increased revenues from that source, but will make it easier in the future to reach new sources of revenues in other lines of business.

Here are some facts that are peddled on the streets of Columbus, and in giving them I will not be slandering anybody. The street railway company of Columbus today is said to have stock to the amount of \$7,000,000.00, and interest-bearing bonds to the amount of \$7,000,000.00, fourteen millions in the aggregate. The largest assessed valuation for taxation of the Columbus City Street Railway Company is this year exactly five hundred thousand dollars. I leave you to consider whether one dollar in twenty-eight of its stock and bonds, or one dollar in fourteen of its interest-bearing bonds, is to be regarded as an equitable adjustment of value. The telephone case will reach just such a case as that, and the courts will say to them that their earning capacity must be taken into consideration. All such organizations have left that out of consideration. But you discover now that all these years we have had the true value in money in land based on its earning capacity, and when the prices of agricultural products go seriously down the earning capacity goes down and its tax rate would be decreased, and if it went the other way its tax rate would be increased. This decision says that the earning capacity shall be taken into consideration in estimating it for taxation.

The most satisfactory feature of these newer forms of taxation is found in the fact that they secure the taxes from proper sources and from people able to pay. The public support through patronage these great enterprises; they become fruitful sources of wealth; there is no good reason why they should not bear a

just proportion of the public expense. The holders of these franchises and the owners of our great corporations recognize the justice of the case and have responded more liberally than was anticipated.

In concluding this paper permit me to offer a few suggestions:

1. I can not urge too strongly the necessity of a close scrutiny of our taxes in the local unites. A township board will often spend more money than is justifiable. There is more waste and greater opportunity for corruption in local taxation than most men are aware of. Two-thirds of the total tax of the state is spent in the townships. It is to be kept in mind that the indebtedness for which we pay taxes is chiefly local. In Governor Bushnell's message to the present legislature he reported cash in the treasury of more than a million dollars. This would pay the debt of the state. There is scarcely a township in the state that could show a balance sufficient to pay its debts. Indeed most local communities have built their improvements with bonds. Our school houses have been built on borrowed capital. If every community had to face the question of paying for its improvements as a citizen pays for his house, it would make fewer and less costly improvements. Indeed, the whole question of bonded indebtedness is not always clearly understood. Men vote for bonds without any appreciation of the fact that these same bonds are to be paid for by taxation; the result is that a great deal of dissatisfaction exists which is not well founded.

The objection should be brought against the vote that made the tax a necessity. But men say that bonds are a necessity; otherwise men would not support public improvements. I do not believe this is always true, although it may be true in particular cases. The truth is, that men ought to be brought face to face with the expenses they incur. The method of improvement by bonds tends to keep men's minds away from the main issue. By that fact more bonds are voted than a deliberate judgment would approve. Without the bonds improvements might come more slowly, but they would be more appreciated when they did come. We have certainly gone to the extreme and the fact that many localities have reached the maximum rate provided for by law proves the necessity of a more careful scrutiny than has been our custom.

2. I offer a second suggestion in regard to supervision of the state's expenditures. As I have already said the state tax is not the great burden of taxation, nevertheless the state's revenues are considerable. There is here a tempting opportunity for lavish expenditure and a reckless use of the public funds. It is not so much the amount involved as the character of the expenditure that is important. The revenues of the state are probably sufficient without further increase for a reasonable support of needed institutions. There is every reason to believe that the revenues will increase from the new sources quite in proportion to the increase in demand for public purposes provided the proper care be taken in making appropriations. A wise expenditure of public revenues should provide for an economical use of the money; there is no valid argument for elaborateness in the use of money in our benevolent institutions. Some of them now are so expensively built as to be almost a scandal. A more conservative use of money and a better division for a period would break the force of the lobby where institutions vie with each other for the size of their appropriations. The only cure here lies in an enlightened and aggressive public sentiment that will insist that officers elected by the people shall make the public good their first duty. The legislature may here be held to a very strict account. The referendum is not now a part of our political machinery, but is sure to become so if disregard of the public becomes chronic.

3. A third suggestion lies in the improvement of the State Board of Equalization. I am informed that a bill will be presented to the present legislature looking to a reduction in the number of this board, so that there shall be one mem-

ber from each congressional district. Whether this will cure any evils remains to be seen. The board as at present constituted is chiefly a guessing club authorized to exercise its gifts by state law and at the state's expense. The last board cost sixty thousand dollars. The value of its services has not been computed. It has authority with no particular responsibility and forms a fine opportunity for trading duplicates and making such other exchanges as may be desirable or profitable to the members. If we could ever get rid of the tax on land for state purpose and secure our revenues from other sources and by other means, the tax problem would be greatly simplified. We should hear no more of the competition between counties for low valuations, and of the misleading reports about the high and low tax rate. If the state would appoint a commission to investigate the question of adjusting taxation it appears to the writer that much might be accomplished in the direction of equalizing the burdens.

4. A fourth suggestion arises from a consideration of the personal property tax. Much has been written upon this question. The facts staring us in the face tell us that but a small proportion of the personal property is returned for taxation. In Massachusetts it is said that more than one thousand millions of personal property escape altogether. In New York it is estimated that two thousand five hundred millions escape. I have not seen any estimate in figures of the amount in Ohio that escapes; it is conservative to say that the amount is equal to the value of the real estate. This, if reported, would make possibly a large reduction in the tax rate. No plan has yet been devised to correct this evil. The simple truth is nobody likes to pay taxes; another truth is that no one wants to pay more than his share; he will, therefore, resort to any and every means to pay his relative share honestly regarding this as his just share. It is of little use to present the facts. Every one knows that with the increase of population and wealth, and especially of new forms of wealth it cannot be true that cities or groups of population are steadily and regularly growing poorer as shown by the tax duplicate, and yet this is precisely the situation. The present system seems to have made it difficult for a moment to tell the truth. What a joy if it were difficult to tell a lie and easy to tell the truth.

5. Let me add one word about the tax rate for the state. It is now 2.84 mills. In 1886 it was 2.70. The fourteen hundredths have been added for higher education including the support of the Ohio State University, the Ohio University, Miami University and Wilberforce University.

If under the new appraisement the grand duplicate should show any substantial increase, and if our revenues from sources other than the duplicate increase, as we have reason to hope, then there would seem to be good prospect that the tax rate for the general revenue might be reduced. But even in that event the relief from present burdens would be very light. Our greatest burdens are local and there only is much relief possible. It is of the highest importance for other than financial reasons that public sentiment be kept awake upon the question. Constant watchfulness is our only safeguard. But with all our eagerness for economy we should not forget that it is always better to spend wisely than to save unwisely. The state must do her duty, this requires money; she ought to have enough, but she need not have enough to corrupt her government.

The President: Is there any discussion upon Dr. Thompson's address?

There being no discussion the President announced an address by Hon. Daniel J. Ryan, ex-Secretary of State, on "The scope and purpose of the Ohio Centennial of 1902."

Mr. Ryan spoke as follows:

*Mr. President and Gentlemen:*

It has been thought proper on the occasion of your meeting at this session, that the Director General of the proposed exposition should be permitted, and he was accordingly invited, to lay before you as representing a wide, influential and far-reaching influence in this state, the purposes and scope of the Centennial. Representing as you do, a part of the state wealth and property which I have no doubt from calculation, pays a majority of the taxes of this state, it is only proper that a project having in view the expenditure of the state's money should be presented to you in some form or another, in order that you may consider and give it your approval, if in your judgment it is worthy of it. And although it is two and one-half years, almost, until this occasion will be celebrated by the state of Ohio, it is not too early, considering that it is going to require a great deal of work, to start the canvass among the citizens of Ohio, explaining to them the purposes and scope of their celebration, for theirs it is. It has been determined by an act of the General Assembly of this state to celebrate the admission of Ohio into the Union and, incidentally, the greatness of the development of the northwest territory, of which she was the first state carved out. The state of Ohio, probably without any egotistical expression, represents as perfect a political community in its accomplishments as any other similar gathering of humanity in the history of the world, and the historian and student of the past will bear it out, that by comparison in the one hundred years as a state in the Union, she has earned as much for the history of the country, has contributed as much to its greatness, has produced as great men and great events and great ideas, as any of her sister states of the Union.

That may to Ohioans sound a little bit egotistical, but I simply appeal to the history of our state for a confirmation of the fact. We have spent more money for education, in proportion to our population, than any other state in the Union. This territory, formerly known as the Northwest Territory, today carries more railroad tonnage than any other similar area on earth. It pays more wages than any other similar area in the United States. The value of its agricultural products is greater than that of any other similar area in the United States. It is built up, I say, from that territory. The occasion and the greatness we are about to celebrate in 1902—that date has been fixed upon for the reason that immediately in 1903, which technically might be adopted as the date of admission, St. Louis celebrates the famous Louisiana Purchase.

The model or plan of the celebration is adopted after the plan of the World's Fair. There is an operating company, a company that spends and collects its own money, and there is a State Commission, which has been appointed by the Governor. Whatever appropriations are made by the state of Ohio will be expended by this Commission. The states of Illinois, Indiana, Michigan, Wisconsin and Minnesota, which constitute a part of the Northwest Territory, have all appointed commissions, and the money appropriated for exhibits will be expended through those channels. The Government of the United States, by an act of Congress, has declared it to be an International Exposition, and has instructed the President of the United States to invite foreign powers to participate in it, and in order that it may be represented, the Congress of the United States has appropriated half a million dollars to be expended through a governmental commission on that occasion.

So now, gentlemen, it remains for the state of Ohio to take her place in that great exposition, fashioned and conceived simply to celebrate events in which she is great, and we hope that she will take her proper place with that dignity commensurate with the event she celebrates, and such as her own great wealth will justify. (Applause.) As I said, the operation of the Centennial will be in the



hands of a private corporation insofar as a corporation organized under the laws of Ohio, having that purpose, can be called a private corporation. But, recognizing the fact that there are various states and various countries that will be there, it requires some aid, some organized agency, which has no other purpose than to harmonize the entire whole, to take charge. It has no right, nor will it undertake to control a single dollar in money of the state of Ohio or of Indiana, Illinois, Michigan or any other state. It will not undertake in any way to control the expenditures of Mexico or the Central American states.

Now, as I have stated, there is the sentimental purpose of this exposition—and it is purely sentiment. There is no room in the entire enterprise to make a dollar. If it does, it will be the first exposition in the history of this or any other country that did make a dollar. But it must have for its purpose the high and elevating educational development of the people of Ohio, and it should be managed, and I have no doubt it will be managed, with that in view. Now, gentlemen, you probably were all at the World's Fair, and you can go back tonight almost as in a dream, and see its beautiful and magnificent architecture. Out of all those marvelous manifestations of human genius and human skill, to their shame, be it spoken, the American people have handed nothing down to the world except the amusements of the "Midway." We do not want that in this exposition. The Commission has taken its firm stand on that question. We are in favor of an exposition looking to the advancement of morality and having for its purpose educational and ennobling influences, so that when it is over, and when it has passed into history, its greatest mission and accomplishment, and the educational and ennobling influences that it had upon the people of the country that visited it will be recognized and have the approval of the people of Ohio.

There can be nothing in the way of making it a success if the state of Ohio will take the stand that it should take, and if it cannot make it a transcendent and glorious success it ought not to have it at all. We do not want any tri-state fair in this proposition. We do not want any "peanut" pavilions scattered around these grounds, but let our architecture be a credit to the state, be of an impressive character, and if it takes money, let us spend it, and if we do not want to spend the money, let us not have the exposition. The place where this exposition is to be held is probably in the center of the most congested population in the world, outside of some parts of China. If you will put a pin in the map at Toledo and with a string describe a circle of two hundred and fifty miles, on one side of its diameter, you will have a territory that has within it fifteen millions of people, and most of those people live on farms and in small villages, and, although it takes in large cities, it is not the cities that constitute the bulk of that great population. The vast majority of it is what might be called the village; therefore the patronage will have to come, not from the crowded, congested cities, but will have to come from the farms, the villages and the hamlets, and we must have it so constructed that the boys and the young men who go there will carry back the lesson of all that the state proposes to do. It will have vast educational interest and we shall see what Ohio has done for education. We shall see that, according to Article 3 of the "Ordinance of 1787," "Religion, morality and knowledge being necessary to good government and the happiness of mankind, schools and the means of education shall forever be encouraged;" education was encouraged and out of it grew this splendid commonwealth.

As one of the authorities of that body appealing to you, representing as you do, such a wide influence in the state of Ohio, we ask you to give your approval, official, individual and as citizens, to this enterprise. We ask you to encourage it because it will reflect credit on the state of Ohio in which every Ohioan can share, and of which he will not be ashamed.

That being the purpose and the only purpose I have in appearing before you, I hope you will take the matter under serious consideration, and when you go home and meet with your legislators I hope you will recommend what you think is proper in the matter. But if Ohio is going to have a Centennial let it be done on a proper scale, and if she is not, let it be known as soon as possible. (Great applause.)

The President: The next subject before us is "The Farmer and the Weather Bureau, Illustrated," by J. Warren Smith, section director of the weather bureau in this city.

Here Mr. Smith gave a very interesting lecture upon the Weather Bureau and its connection with agricultural interests.

The President: The next thing in order will be the report of the Committee on Resolutions, of which Mr. J. L. Carpenter is chairman.

Mr. Carpenter: Mr. Chairman, your committee had but a short time to review these resolutions. I will hand them to the Secretary to be read.

The Secretary then read the report of the committee, and on motion of Mr. George W. Carey, of Warren county, duly seconded, it was adopted.

*Resolved*, That we herein express our dissatisfaction with the dog law passed by our General Assembly in 1898, making dogs personal property and the killing of the same punishable by fine and imprisonment, and we hereby request its modification or repeal.

*Resolved*, That we congratulate our State Board of Agriculture upon the splendid success attending its work as shown in our annual State Fair and Farmers' Institutes, and that we favor such appropriations by our General Assembly as will enable it to continue its work and place our State Fair upon a self-sustaining basis.

*Resolved*, That we heartily endorse the effort now being made to suppress by law the sale of cigarettes and cigarette materials.

*Resolved*, That we ask for an increased appropriation to carry on the work of the Ohio Agricultural Experiment Station.

*Resolved*, That we ask for an increased appropriation for the use of the Ohio State Horticultural Society, and we also ask that no backward steps be taken in the treatment of the Ohio State University.

*Resolved*, That we favor legislation to hold in check the destructive spread of the San Jose scale.

*Resolved*, That we favor the enactment of a law prohibiting the killing of skunks and quails for a period of five years from January 1, 1900.

WHEREAS, The Executive Department of our Government has lately concluded a reciprocity treaty under a provision of the Dingley Bill, by which a 20 per cent. reduction may be made in tariff rates on wools, hides, sugar, tobacco, etc., in return for like concessions on the exported machinery of this country; therefore,

*Resolved*, By this State Board of Agriculture, That we earnestly protest against the ratification of said treaty by the United States Senate, and ask our Senators from Ohio to interest themselves and take active steps to prevent its ratification,

and that a certified copy of this preamble and resolution be forwarded to both Senators.

*Resolved*, That it shall be a misdemeanor, punishable by a fine, to hunt game on the premises of another without the permission of the owner of said land.

*Resolved*, That, recognizing the fact that the question of forestry is certain to require the attention of agricultural economists at an early day, we respectfully ask the present General Assembly to take such steps and pass such laws as may encourage the preservation of such forests as yet remain and encourage the establishment of others.

*Resolved*, That the thanks of this Board be extended to the City Council of Columbus for its courtesy in granting the use of Council Chamber for the annual meeting of the Ohio State Board of Agriculture.

J. L. CARPENTER,  
C. H. GANSON,  
A. L. PAUL,  
*Committee.*

The Board then took a recess until 7:30 p. m.

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#### ..EVENING SESSION.

The meeting was called to order at 7:30 p. m., pursuant to adjournment, when President Ely stated that the first thing in order would be the election of two members of the State Board of Agriculture.

Mr. Mastick: I desire to repeat the motion that I made last year that no proxies be allowed to vote at this convention.

The motion was seconded and carried.

Thereupon the President appointed as tellers Mr. W. I. Tenney, of Miami county, Mr. J. S. Stuckey, of Van Wert county, and Mr. Frank Fox, of Hamilton county, and the voting was proceeded with.

The first ballot resulted in the election of Mr. T. E. Cromley, of Pickaway county, and Mr. T. L. Calvert, of Clark county, as members of the State Board of Agriculture for the legal term of five years.

There being no further business to come before the meeting the Fifty-fifth annual meeting of the Ohio State Board of Agriculture then, upon motion, adjourned *sine die*.

TENTH ANNUAL REPORT  
OF  
FARMERS' INSTITUTES

HELD IN OHIO IN 1899-1900,

UNDER THE AUSPICES OF THE

Ohio State Board of Agriculture

AND

PROCEEDINGS OF THE STATE FARMERS' INSTITUTE,  
HELD IN COLUMBUS, JANUARY  
9 AND 10, 1900.



# TENTH ANNUAL REPORT

OF

## FARMERS' INSTITUTES

Held in Ohio During the Winter  
of 1899-1900.

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The Farmers' Institute season of 1899-1900 began Monday, November 27, 1899, and closed March 3, 1900, making fourteen weeks of Institute work with six or eight circuits in operation all of the time, except Christmas week, when but four Institutes were held, and the week of the State Farmers' Institute. There were established in the fall of 1899 two hundred and fifty-six regular county Institutes; three of these were given up for local reasons, those at Carrollton, Carroll county, Leetonia, Columbiana county, and Delaware, Delaware county, so that there were held two hundred and fifty-three regular Institutes and one State Farmers' Institute, under the immediate auspices of the State Board of Agriculture. Many independent Institutes were also held, of which twenty made formal reports.

With very few exceptions the Institutes reported a flattering increase in interest shown and a desire on the part of those in attendance to do all in their power to further the work. The good being done by these meetings is almost incalculable and petitions continue to be received asking for the establishment of additional Institutes. It will be seen, however, by reference to the financial statement that there were established for the past season as many as can be provided for under the present law and with the funds now at command, the per capita allowance having been exceeded in the payment of per diem and expenses of lecturers, expenses of the State Institute, cartage on boxes of books and sundry expenses, creating a deficit of thirty-eight dollars and eighty-seven cents (\$38.87) to be met by the State Board of Agriculture. Having reached the limit in point of numbers, newly organized societies must be provided for by the system of rotation, which is in use in several counties and which gives to each society an Institute meeting as often as once in two or three years.

The State Farmers' Institute, held at Columbus, January 9 and 10, 1900, was fully equal in point of interest and valuable papers presented

to any previous meeting. The custom followed for the past three years of holding no other Institutes during that week leaves all Institute workers and lecturers free to attend, thus giving a rare opportunity for an interchange of ideas.

The Board publishes herewith a detailed statement of receipts under the provisions of the "Law governing Farmers' Institute Societies in Ohio," in accordance with instructions contained in the law; also papers read at several Institutes embracing subjects of interest to farmers, and all interested in agricultural pursuits. Fewer addresses are reduced to manuscript now than was formerly the case, nearly everyone preferring to speak extemporaneously, consequently there is not the variety of subjects embraced in these papers that is usually found, and many valuable ones have been received that could not be published because of their being on the same line of thought of others previously accepted. At the suggestion of the State Board of Health the subject of tuberculosis in animals and measures for its prevention was proposed for especial discussion during the Institute season. The Board of Health appointed speakers for several Institutes and many instructive papers were presented, some of which appear in this pamphlet.

The Board feels much gratification at being able to make so favorable a report and has the pleasure of saying further that the outlook for the coming season is indicative of a still more pronounced success, if possible.

By direction of the State Board of Agriculture.

WELLS W. MILLER, Secretary.

Columbus, O., March 30, 1900.

## FINANCIAL STATEMENT.

The following statement shows the receipts and disbursements of the Ohio State Board of Agriculture on account of Farmers' Institutes, for the season of 1899-1900, held under the law passed April 26, 1890, and amended April 27, 1896.

## RECEIPTS.

Amounts collected from the counties on the basis of three mills per capita, being for the State Board's proportion of the six mills per capita allowance provided by the law for the maintenance and support of County Institute societies in Ohio:

Adams County .....	\$78 27
Allen County .....	121 93
Ashland County .....	66 66
Ashtabula County .....	125 00
Athens County .....	105 58
Auglaize County .....	84 34
Belmont County .....	125 00
Brown County .....	89 69
Butler County .....	125 00
Carroll County .....	52 69
Champaign County .....	80 94
Clark County .....	125 00
Clermont County .....	100 65
Clinton County .....	72 72
Columbiana County .....	125 00
Coshocton County .....	80 10
Crawford County .....	95 78
Cuyahoga County .....	125 00
Darke County .....	125 00
Defiance County .....	77 30
Delaware County .....	81 56
Erie County .....	106 98
Fairfield County .....	101 81
Fayette County .....	66 92
Franklin County .....	125 00
Fulton County .....	66 06
Gallia County .....	81 01
Geauga County .....	40 46
Greene County .....	89 46
Guernsey County .....	85 93
Hamilton County .....	125 00
Hancock County .....	125 00
Hardin County .....	86 81
Harrison County .....	62 49
Henry County .....	75 24
Highland County .....	87 14
Hocking County .....	67 97
Holmes County .....	63 41
Huron County .....	95 84
Jackson County .....	\$85 22



Jefferson County .....	118 24
Knox County .....	82 80
Lake County .....	54 70
Lawrence County .....	118 66
Licking County .....	125 00
Logan County .....	82 15
Lorain County .....	120 88
Lucas County .....	125 00
Madison County .....	60 17
Mahoning County .....	125 00
Marion County .....	74 18
Medina County .....	65 22
Meigs County .....	89 43
Mercer County .....	81 66
Miami County .....	119 26
Monroe County .....	75 52
Montgomery County .....	125 00
Morgan County .....	57 42
Morrow County .....	54 36
Muskingum County .....	125 00
Noble County .....	62 25
Ottawa County .....	65 92
Paulding County .....	77 79
Perry County .....	93 45
Pickaway County .....	80 87
Pike County .....	52 44
Portage County .....	83 60
Preble County .....	70 26
Putnam County .....	90 56
Richland County .....	114 21
Ross County .....	118 36
Sandusky County .....	91 85
Scioto County .....	106 13
Seneca County .....	122 60
Shelby County .....	74 12
Stark County .....	125 00
Summit County .....	125 00
Trumbull County .....	125 00
Tuscarawas County .....	125 00
Union County .....	68 58
Van Wert County .....	89 01
Vinton County .....	48 13
Warren County .....	76 40
Washington County .....	125 00
Wayne County .....	117 01
Williams County .....	74 69
Wood County .....	125 00
Wyandot County .....	65 16

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Total ..... \$8,173 36

## DISBURSEMENTS.

For per diem and expense of lecturers, as follows:

Allen, F. L., Kinsman, two weeks and four days.....	\$129 25
Begg, John, Columbus Grove, nine weeks ....	440 55
Bradfute, O. E., Cedarville, one week .....	41 35
Cowden, W. N., Quaker City, six weeks and four days.....	315 75
Decker, J. W., Columbus (no per diem) one week.....	13 30
Dobie, J. Al., Gutman, nine weeks.....	493 53
Ellis, S. H., Waynesville, two weeks.....	105 68
Farnsworth, W. G., Waterville, two weeks and four days.....	114 65
Farnsworth, W. W., Waterville, eight weeks.....	365 61
Freeman, C. M., Rex, six weeks.....	297 98
Gibbs, W. D., Columbus (no per diem) two weeks.....	30 90
Housekeeper, G. C., Bowling Green, five weeks.....	235 95
Ickis, John G., Adena, two weeks.....	96 27
Kellerman, W. A., Columbus (no per diem) one week and four days .....	51 00
Kelley, Henry S., Geneva, three weeks.....	126 95
Lawrence, George E., Marion, six weeks.....	278 30
Laylin, T. C., Norwalk, eight weeks and four days.....	111 94
Lazenby, William R., Columbus (no per diem) three weeks....	46 45
Lehmann, J. A., Savannah, five weeks.....	233 90
McLaughlin, S. K., Hurford, six weeks.....	322 60
Miller, H. P., Sunbury, eight weeks.....	355 64
Miller, T. J., Leipsic, five weeks.....	255 65
Montgomery, Cary W., Newark, two weeks.....	80 60
Roudebush, Lowell, Owensville, nine weeks.....	399 27
Scott, George E., Mt. Pleasant, six weeks and four days.....	344 15
Shawver, John L., Bellefontaine, five weeks and two days.....	262 76
Shirer, Alfred, Dayton, four weeks.....	189 75
Todd, S. H., Wakeman, twelve weeks.....	550 10
Trumbo, E., Cranberry, four weeks.....	187 34
Wallace, R. H., Chillicothe, eight weeks and three days.....	397 30
White, A. L., Norwich, four weeks and four days.....	226 70
White, D. S., Columbus (no per diem), one day.....	5 40
Williams, C. G., Gustavus, eight weeks.....	428 71
Wing, J. E., Mechanicsburg, two weeks .....	99 40
Total .....	\$7,874 68

## MISCELLANEOUS.

Printing and sundry expenses for State Farmers' Institute, held at Columbus, January 9-10, etc.....	\$131 30
Preparing report for printer, cartage on boxes of books, freight, expressage, etc.....	206 25
Total .....	\$8,212 23
Excess of disbursements over receipts, met by the State Board of Agriculture .....	\$38 87

FARMERS' INSTITUTES HELD IN OHIO DURING THE SEASONS BEGINNING NOVEMBER 27, 1899, AND ENDING  
MARCH 3, 1900.

Counties.	Population.	Institutes Held.		Attendance Reported.	Local Expenses Reported by the Society.	Per Capita Allowance to Institute Societies under the Institute Law.
		Where.	When.			
Adams .....	26,093	Peebles .....	November 29-30	400	\$39 70	\$78 27
Allen .....	40,644	Cherryfork .....	January 26-27	350	37 00	37 00
		Delphos .....	December 18-19	425	70 00	121 93
		Spencerville .....	January 1-2	125	17 07	17 07
		Yoder .....	January 24-25	270	37 83	37 83
Ashland .....	22,223	Beaverdam .....	February 21-22	400	20 10	20 10
		Polk .....	December 8-9	400	30 35	66 66
Ashtabula .....	43,655	Loudonville .....	February 2-3	850	22 21	22 21
		Andover .....	December 6-7	860	31 25	125 00
		Ashtabula .....	December 8-9	150	28 40	28 40
		Pierpont .....	January 17-18	300	26 13	26 13
Athens .....	35,194	Geneva .....	January 19-20	245	36 00	36 00
		Coolville .....	December 1-2	250	21 59	105 53
		Albany .....	January 3-4	221	21 55	21 55
		Amesville .....	January 17-18	200	26 25	26 25
Auglaize .....	28,100	Athens .....	February 14-15	250	18 00	84 30
		Cridersville .....	December 18-19	800	24 40	24 40
		St. Johns .....	January 22-23	325	63 85	125 00
		Kosuth .....	February 2-3	450	39 90	39 90
Belmont .....	37,413	Colerain .....	January 3-4	400	45 00	45 00
		Barnesville .....	February 2-3	400	39 90	39 90
Brown .....	29,899	Belmont .....	February 19-20	375	45 00	45 00
		Decatur .....	November 27-28	400	29 89	29 89
		Feesburg .....	January 1-2	82	27 00	27 00
Butler .....	48,597	Union Plains .....	February 9-10	380	29 25	29 25
		Monroe .....	December 6-7	275	40 84	125 00
		Sevenmile .....	January 17-18	200	31 25	31 25
		Ross .....	February 5-6	250	31 25	31 25
		Reilly .....	February 26-27	450	33 00	33 00

Carroll .....	17,566	Minerva .....	December 29-30 .....	80	26 00	52 00
Champaign .....	26,980	*Carrollton .....	February 28, March 1 .....	300	26 02	80 84
Clark .....	52,277	Kings Creek .....	December 22-23 .....	300	26 98	...
		Westville .....	January 31, February 1 .....	300	30 00	...
		Mechanicsburg .....	February 22-24 .....	375	31 47	125 00
		Catawba .....	December 30-31 .....	300	32 75	...
		New Carlisle .....	January 29-30 .....	175	29 55	...
		South Charleston .....	January 31, February 1 .....	175	22 85	...
		Tremont City .....	February 19-20 .....	800	56 85	100 65
Clermont .....	33,553	Bethel .....	December 1-2 .....	500	25 16	...
		Amelia .....	January 3-4 .....	200	25 16	...
		Mulberry .....	February 7-8 .....	350	25 00	...
		Lorado .....	March 2-3 .....	650	62 43	72 72
Clinton .....	24,240	Clarksville .....	January 24-25 .....	1,000	51 36	125 00
Columbiana .....	59,029	Wilmington .....	February 28, March 1 .....	650	41 66	...
		Lisbon .....	February 5-6 .....	500	39 96	...
		* Leetonia .....	December 4-5 .....	230	26 70	80 10
Coshocton .....	26,703	New Waterford .....	February 19-30 .....	290	23 00	...
		Plainfield .....	December 20-21 .....	325	24 38	...
		New Guilford .....	January 29-30 .....	400	25 45	95 78
Crawford .....	31,927	Keene .....	February 5-6 .....	300	31 92	...
		Tiro .....	December 4-5 .....	600	31 20	...
		Bucyrus .....	January 22-23 .....	200	40 00	125 00
Cuyahoga .....	309,970	Galion .....	February 16-17 .....	400	32 95	...
		Chagrin Falls .....	December 13-14 .....	200	25 00	...
		Euclid .....	December 15-16 .....	400	30 50	...
		Strongsville .....	February 9-10 .....	375	31 25	125 00
		Arcanum .....	February 12-13 .....	200	31 25	...
		New Madison .....	January 24-25 .....	275	31 25	...
		Versailles .....	February 26-27 .....	450	31 25	...
Defiance .....	25,769	Hicksville .....	February 28-29 .....	300	34 65	77 30
Delaware .....	27,189	Defiance .....	December 22-23 .....	350	35 65	...
		* Delaware .....	February 9-10 .....	...	...	...
		Sunbury .....	December 8-9 .....	...	...	...
		Berlin Heights .....	January 31, February 1 .....	300	40 78	51 58
		Castalia .....	December 18-19 .....	200	35 46	106 88
		Milan .....	January 15-16 .....	400	35 46	...
		Basil .....	February 16-17 .....	900	36 50	...
Fairfield .....	33,989	Amanda .....	December 13-14 .....	600	38 00	101 81
		Pleasantville .....	January 22-23 .....	500	38 00	...
Fayette .....	22,309	Goodhope .....	February 5-6 .....	700	32 75	60 92
		Bloomington .....	January 26-27 .....	300	29 30	...
		New Martinsburg .....	January 26-27 .....	200	31 55	...
		Hilliard .....	February 15-16 .....	125	31 25	125 00
Franklin .....	124,087	Westerville .....	January 26-27 .....	250	27 35	...
		Groveport .....	January 26-27 .....	500	27 40	...
		Pleasant Corners .....	February 12-13 .....	300	30 06	...

\* Not held because committee failed to make arrangements.

† Not held because of epidemic disease in the city.

## FARMERS' INSTITUTES, ETC.—Continued.

Counties	Population.	Institutes Held.		Attendance Reported.	Local Expenses Reported by the Society.	Per Capita Allowance to Institute Societies under the Institute Law.
		Where.	When.			
Fulton .....	22,023	Delta .....	January 3-4 .....	500	25 50	66 06
Gallia .....	27,005	Wauseon .....	February 21-22 .....	480	23 50	81 01
Geauga .....	13,480	Rodney .....	November 29-30 .....	480	14 50	40 46
Greene .....	29,880	Swan Creek .....	December 19-19 .....	250	13 25	89 48
		Barton .....	February 5-6 .....	180	40 20	
		Yellow Springs .....	December 14-19 .....	650	34 06	
		Cedarville .....	January 24-30 .....	500	13 65	
		Xenia .....	February 16-17 .....	300	70 00	
Guernsey .....	28,645	Cambridge .....	January 31, February 1 .....	300	42 00	85 93
Hamilton .....	374,573	Quaker City .....	February 21-22 .....	235	43 00	125 00
		Cheves .....	November 27-28 .....	500	31 25	
		Newtown .....	November 29-30 .....	250	31 25	
		Blueash .....	January 5-6 .....	415	31 25	
		Mt Healthy .....	February 28, March 1 .....	300	33 21	
Hancock .....	42,568	Arcadia .....	January 3-4 .....	300	31 25	125 00
		Arlington .....	January 19-20 .....	200	31 25	
		McComb .....	January 31, February 1 .....	400	35 48	
		Benton Ridge .....	February 19-20 .....	600	35 00	
Hardin .....	28,939	Ada .....	January 5-6 .....	800	37 80	66 81
		Forest .....	January 31, February 1 .....	280	46 70	
Harrison .....	20,830	Frederick .....	January 29-30 .....	400	70 00	62 49
		Cadott .....	February 9-10 .....	400	126 19	
Henry .....	25,080	Napoleon .....	December 11-12 .....	40	24 08	75 24
		Deshler .....	January 5-6 .....	375	35 08	
		Hamler .....	February 2-3 .....	300	35 08	
Highland .....	29,048	Rainboro .....	January 22-23 .....	200	29 04	87 14
		Marysville .....	January 24-25 .....	450	29 04	
		Hillsboro .....	March 2-3 .....	1,000	24 46	
		Laurelville .....	February 7-8 .....	250	40 94	67 97
Hocking .....	22,668	Logan .....	February 12-13 .....	500	20 25	

Holmes	31,189	Killbuck	January 5-6	500	29 65	68 41
Huron	31,949	Holmesville	January 31, February 1	350	31 70	
Jackson	28,408	Monroeville	November 29-30	75	23 20	95 84
Jefferson	39,415	Greenwich	January 17-18	400	27 50	
Knox	27,600	East Townsend	January 24-25	475	26 85	
Lake	18,235	Jackson	January 1-2	380	13 50	85 22
Lawrence	39,556	Camba	January 19-20	200	20 85	
Licking	43,279	Smithfield	January 1-2	250	82 45	118 24
Logan	27,386	Mt. Pleasant	January 31, February 1	500	55 00	
Lorain	40,205	Richmond	February 2-3	725	99 85	
Lucas	102,296	Danville	December 13-14	200	27 60	82 80
Madison	20,057	Centerburg	January 24-25	260	25 84	
Mahoning	55,979	Fredericktown	February 28, March 1	450	23 11	
Marion	24,727	Willoughby	December 11-12	250	27 50	54 70
Medina	21,742	Painesville	February 7-9-9	350	37 00	
Meigs	29,813	Labelle	December 1-2	200	12 00	118 66
Mercer	27,290	South Point	December 20-21	300	9 65	
Miami	39,754	Brownsville	December 11-12	200	31 95	125 00
		Utica	December 15-16	300	26 84	
		Jersey	February 2-3	300	33 25	
		Granville	February 26-27	300	31 25	82 15
		DeGraff	December 22-23	250	25 25	
		Belleville	February 2-3	400	27 38	
		Pittsfield	March 2-3	300	27 38	
		Rochester	November 27-28	320	35 85	120 88
		North Ridgeville	January 19-20	300	88 44	
		Sylvania	January 22-23	420	49 60	
		Waterville	January 5-6	300	31 25	125 00
		Maumee	January 15-16	250	31 25	
		Richfield Center	February 5-6	150	31 25	
		West Jefferson	February 19-20	300	31 25	60 17
		London	February 2-3	500	28 12	
		Berlin Center	February 14-15	275	24 70	125 00
		Canfield	December 6-7	375	31 25	
		North Lima	December 27-28	350	31 25	
		North Jackson	February 7-8	250	31 00	
		Caledonia	February 21-22	400	24 30	74 18
		Marion	December 6-7	400	21 76	
		Waldo	January 24-25	400	22 02	
		Brunswick	February 13-20	350	20 01	65 22
		Chatham	December 4-5	207	10 55	
		Seville	January 26-27	300	22 10	
		Dyesville	February 7-8	400	25 65	89 43
		Chester	November 27-28	300	21 25	
		Racine	December 11-12	300	27 50	
		Fort Recovery	January 5-6	350	25 25	81 66
		Neptune	December 15-16	300	14 70	
		Wabash	January 26-27	240	20 40	
		West Charleston	February 15-16-17	250	29 75	119 26
		Covington	December 27-28	500	30 25	
		West Milton	January 26-27	600	29 65	
		Piqua	February 16-17	350	48 25	
			February 23-24			

## FARMERS' INSTITUTES. ETC.—Continued.

Counties.	Institutes Held.		Attendance Reported.	Local Expense Reported by the Society.	Per Capita Allowance to Institute Societies under the Institute Law.
	Where.	When.			
Monroe .....	Beallsville .....	January 5-6 .....	875	37 76	76 53
Montgomery .....	Woodfield .....	February 12-13 .....	100	22 10	...
...	Germanstown .....	December 8-9 .....	340	42 40	125 00
...	Centerville .....	January 19-20 .....	400	32 25	...
...	Brookville .....	January 22-23 .....	350	38 95	...
...	Vandalia .....	February 21-22 .....	325	31 25	...
Morgan .....	Chesterhill .....	November 29-30 .....	300	23 46	57 43
Morrow .....	Triadelphia .....	January 15-16 .....	300	23 71	...
...	Sparta .....	December 11-12 .....	300	21 60	...
Muskingum .....	Cardington .....	January 29-30 .....	500	43 40	54 30
...	Chandlersville .....	December 9-9 .....	600	50 10	125 00
...	Frazysburg .....	December 22-23 .....	200	40 00	...
...	White Cottage .....	February 16-17 .....	500	66 32	...
...	New Concord .....	February 23-24 .....	600	45 05	...
Noble .....	Belle Valley .....	December 6-7 .....	200	30 86	62 25
...	Summerfield .....	February 14-15 .....	350	32 80	...
Ottawa .....	Port Clinton .....	December 20-21 .....	500	29 25	65 32
...	Oak Harbor .....	February 12-13 .....	150	32 96	...
Paulding .....	Antwerp .....	December 13-14 .....	200	25 93	77 79
...	Oakwood .....	December 20-21 .....	175	23 93	...
Perry .....	Payne .....	February 7-8 .....	250	23 47	...
...	Rehoboth .....	November 27-28 .....	550	31 15	93 45
...	Mt. Perry .....	January 29-30 .....	500	31 00	...
...	Sayre .....	February 18-17 .....	300	31 15	...
Pickaway .....	Williamsport .....	January 24-25 .....	350	29 80	80 87
...	Ashville .....	February 9-10 .....	800	29 50	...
...	Tarleton .....	February 28, March 1 .....	500	41 19	...
Pike .....	Idaho .....	January 3-4 .....	250	19 35	52 44
...	Piketon .....	January 15-16 .....	270	13 70	...

**FARMERS' INSTITUTES.**

Fortage	37,000	Yantra Station	November 27-28	95 09
Proble	29,401	Randolph	December 8-9	95 09
Punam	30,108	Charleston	February 10-17	15 08
Richland	38,072	Garrettsville	February 23-24	15 40
Ross	39,454	New Paris	December 11-13	34 00
Sandusky	30,617	Camden	January 13-16	46 30
Scioto	35,877	Lewisburg	February 14-15	23 43
Seneca	40,899	Ottawa	January 8-4	39 10
Shelby	24,707	Continental	February 9-10	80 18
Stark	34,170	Kimer	February 12-13	37 40
Summit	34,089	Adario	January 15-16	80 18
Trumbull	42,373	Butler	January 22-23	28 55
Tuscarawas	46,618	Lucas	February 14-15	16 50
Union	22,890	Bellville	March 2-3	16 90
Van Wert	29,671	Frankfort	March 2-3	500
Vinton	16,045	Kingston	December 22-23	87 10
Warren	25,468	Fremont	March 2-3	118 86
		Clyde	January 17-18	46 50
		Mt. Joy	December 1-2	91 85
		Haverhill	December 22-23	106 13
		Scioto	January 17-18	24 80
		Attica	December 1-2	23 55
		Tiffin	January 19-20	350
		Greenspring	February 14-15	350
		Jackson Center	February 20-21	500
		Sidney	February 28, March 1	40 55
		Alliance	December 1-2	74 12
		New Berlin	January 1-2	125 00
		Navarre	January 17-18	26 75
		Marlboro	February 26-27	300
		Nimishila	January 19-20	29 50
		North Springfield	February 5-6	250
		Osborn Corners	February 14-15	26 00
		Newton Falls	February 28-30	825
		Hartford	November 29-30	41 00
		Johnsonville	December 4-5	350
		Vienna	January 15-16	55 20
		Gnadenhuthen	February 9-10	31 25
		Winfield	December 18-19	250
		New Philadelphia	January 15-16	350
		Zoar	February 7-8	275
		Richwood	March 2-3	80 40
		Marysville	January 26-27	125 00
		Van Wert	February 21-22	41 00
		Convoy	December 15-16	55 20
		Ohio City	February 5-6	31 25
		Wilkesville	February 14-15	125 00
		New Plymouth	December 18-19	200
		Morrow	January 15-16	250
		Franklin	December 4-5	31 25
		Waynesville	January 22-23	80 69
				275
				210
				370
				29 60
				30 75
				83 75
				86 01
				29 31
				27 65
				24 84
				14 49
				48 13
				15 14
				34 00
				76 40
				83 55
				93 70



## FARMERS, INSTITUTES, ETC.—Concluded.

Counties.	Population.	Institutes Held.		Attendance Reported.	Local Expense Reported by the Society.	Per Capita Allowance to Institute Societies under the Institute Law.
		Where.	When.			
Washington .....	42,580 .....	Lower Salem .....	December 4-5 .....	200 .....	40 00 .....	125 00 .....
		Bartlett .....	January 1-2 .....	280 .....	21 50 .....	.....
		Watertown .....	January 10-20 .....	400 .....	40 17 .....	.....
Wayne .....	39,005 .....	Creston .....	December 6-7 .....	350 .....	20 25 .....	117 01 .....
		Wootter .....	January 8-4 .....	350 .....	30 00 .....	.....
		Lattasburg .....	January 8-10 .....	375 .....	20 75 .....	.....
		Shreve .....	February 12-15 .....	300 .....	20 80 .....	.....
Williams .....	24,897 .....	Bryan .....	February 1-2 .....	350 .....	25 50 .....	74 60 .....
		Montpelier .....	February 22-24 .....	350 .....	14 00 .....	.....
Wood .....	44,392 .....	Prairie Depot .....	January 1-2 .....	450 .....	49 25 .....	125 00 .....
		Bowling Green .....	January 17-18 .....	300 .....	25 00 .....	.....
		Bloomdale .....	January 29-30 .....	230 .....	25 80 .....	.....
		Grand Rapids .....	February 7-8 .....	500 .....	31 25 .....	.....
Wyandot .....	21,792 .....	Upper Sandusky .....	January 29-30 .....	300 .....	31 25 .....	65 16 .....
		Nevada .....	February 22-24 .....	500 .....	28 00 .....	.....
Totals .....	.....	.....	.....	91,540 .....	\$8,033 23 .....	\$8,173 36 .....

## INDEPENDENT INSTITUTES.

Counties.	Institutes Held.		Attendance Reported.	Local Expenses Reported by Society.
	Where.	When.		
Allen .....	Bluffton .....	January 31, February 1.....	300	\$39 06
Auglaize .....	Buckland .....	March 8-9 .....	250	24 85
Champaign .....	Mingo .....	January 12-13 .....	400	14 65
Clark .....	Pitchin .....	March 1-2 .....	175	81 23
Clermont .....	Williamsburg .....	February 16-17 .....	400	45 00
Clinton .....	New Vienna .....	February 2-3 .....	350	20 75
Crawford .....	Auburn Center .....	February 9-10 .....	175	8 85
Fairfield .....	Carroll .....	February 16-17 .....	400	24 55
Hamilton .....	Newtown .....	February 24 .....	230	25 00
Huron .....	New London .....	January 5-6 .....	450	45 00
.....	Wakeman .....	February 21-22 .....	350	19 50
Lake .....	Perry .....	December 11-12 .....	225	16 25
Lorain .....	Columbia Center .....	January 19-20 .....	50 0	39 87
Medina .....	Mallet Creek .....	December 15-16 .....	500	27 50
.....	Poe .....	January 23-24 .....	215	37 00
Muskingum .....	Norwich .....	December 26-27 .....	350	42 55
.....	Dresden .....	January 12-13 .....	200	37 74
Preble .....	Eldorado .....	February 9-10.....	300	30 00
Putnam .....	Leipsic .....	February 21-22 .....	900	61 15
Ross .....	South Salem .....	February 22 .....	100	75
Totals .....	.....	.....	6,070	\$640 74

## RECAPITULATION.

1. Amount collected by the State Board of Agriculture from the three mills per capita tax, from the eighty-eight (88) counties of the state, in all of which institutes were held.....	\$8,173 36
2. Amount allowable to two hundred and fifty-six (256) institute societies from the three mills per capita tax, from the eighty-eight (88) counties of the state, in all of which institutes were held....	8,173 36
3. Amount expended by the State Board of Agriculture in aid of two hundred and fifty-six (256) county institutes for lecturers.....	7,874 68
4. Amount expended by county societies for expenses of two hundred and fifty-three (253) institutes.....	8,053 23
5. Total expenses for two hundred and fifty-six (256) institutes.....	15,927 91
6. Average expenditure, per institute, by the State Board of Agriculture for lecturers (256).....	30 76
7. Average expenditure, per institute, by societies (253).....	31 83
8. Total average expense per institute.....	62 95
9. Total average number of persons in attendance at two hundred and fifty-three (253) institutes.....	91,540
10. Average number of persons in attendance at each.....	361.4
11. Number of independent institutes reported.....	20
12. Expense of twenty (20) independent institutes.....	640 74
13. Average expense of independent institutes.....	32 03
14. Total average number of persons attending the twenty (20) independent institutes reported .....	6,670
15. Average attendance at each of the twenty (20) independent institutes reported .....	333.5

# Names of Lecturers and Their Topics

For the Institute Season of 1899-1900.

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Lectures from Agricultural Department of the Ohio State University,  
Columbus, Ohio.

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**Prof. Wm. R. Lazenby,**

## HORTICULTURE AND FORESTRY.

1. Does Farming Pay? Twenty minutes.
2. Some Troublesome Insects. Thirty minutes.
3. A Study of the Apple. Twenty minutes.
4. A Talk About Weeds. Thirty minutes.
5. Winter Gardening for Profit. Twenty minutes.
6. Some Profitable Special Crops. Thirty minutes.
7. Crimson Clover and other Clover Crops. Twenty minutes.
8. Some Reasons for Growing Forest Trees. Twenty minutes.
9. The External Adornment of the Home. Thirty minutes. Night.
10. Nature Study for Boys and Girls. Thirty minutes. Night.

**Prof. W. A. Kellerman,**

## BOTANY.

1. Modern Science in Modern Life. Fifty minutes.
2. Nature and Work of Bacteria. Forty-five minutes.
3. Some Principles Underlying Sanitation. Forty minutes.
4. Some Defects in our Education. Forty-five minutes.
5. Smuts, Rusts and Blights. Forty minutes.
6. The Home as an Educator. Forty minutes.
7. Some Laws of Plant Growth. Thirty minutes.
8. Trees and Plants for Shade and Ornament. Thirty minutes.

**Prof. W. D. Gibbs,**

## AGRICULTURE.

1. Origin and Nature of Soils. Twenty minutes.
2. Controlling Soil Moisture by Tillage. Twenty minutes.
3. Modern Methods in Corn Culture. Twenty minutes.

4. Reasons for Crop Rotation. Twenty minutes.
5. Stock Foods and Feeding. Twenty minutes.
6. Planning the Kitchen. Twenty minutes.
7. Young People and their Opportunities. Thirty minutes. Night.

**Prof. David S. White,**

**COLLEGE OF VETERINARY MEDICINE.**

1. Tuberculosis in Cattle and the Tuberculin Test. Thirty minutes.
2. The Care of Horses' Hoofs. Thirty minutes.
3. Hog Cholera and Swine Plague. Thirty minutes.
4. Two Veterinary Instruments Which Should be on Every Farm. Twenty minutes.
5. Two Usually Fatal Diseases of Farm Animals, Which may Readily be Prevented. Thirty minutes.
6. Diseases of Sheep. Thirty minutes.
7. The Passing of the Horse. Forty-five minutes. Night.

**Prof. J. W. Decker, Dairying.**

1. The Care of Milk. Twenty minutes.
2. Some Facts about Milk. Twenty minutes.
3. Cows for Love or Profit, Which? Twenty minutes.
4. Why a Farmer's Son Should Take an Agricultural College Course. Twenty Minutes.
5. European Dairying. Fifteen minutes.
6. Some Points about Cheese. Twenty minutes.
7. Farm Dairy Butter from the Cow to the Consumer. Twenty minutes.
8. The Ohio Dairy School. Twenty minutes.

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**J. Warren Smith,**

**DIRECTOR OHIO SECTION, WEATHER BUREAU, COLUMBUS, O.**

1. Weather Forecasts and Warnings, How Made, Distributed and Utilized. Forty minutes.
2. Frost Warnings and the Protection of Crops from Frost. Forty minutes.
3. The Location of Ohio in the Climatological Zone of the Northern Hemisphere. Thirty-five minutes.
4. Lightning and Electricity of the Air. Forty minutes.
5. The Atmosphere. Forty minutes.
6. The Farmer and the Weather Bureau. Fifty-five minutes.
7. Hurricanes, Cyclones and Tornadoes. Fifty minutes.

**Lecturers Employed by the Ohio State Board of Agriculture, with Post-office Addresses and Topics.**

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**F. L. Allen, Kinsman, O.**

1. Fertility. Twenty-five minutes.
2. Some Profitable Investments. Thirty minutes. Night.
3. Maple Creek Farm, Its Management. Twenty minutes.
4. Cattle Feeding. Twenty minutes.
5. Wheat Raising. Twenty minutes.
6. The Potato Crop. Twenty minutes.
7. Silos and Silage. Thirty minutes.
8. The Farmer. Thirty minutes. Night.
9. Saving and Applying Manures. Twenty minutes.

**John Begg, Columbus Grove, O.**

1. Corn Culture. Twenty minutes.
2. Sheep as a Live Stock Product in Diversified Farming. Twenty minutes.
3. From Seed Time to Harvest in the Wheat Field. Twenty-five minutes.
4. Practical Methods in Keeping up Soil Fertility. Twenty-five minutes.
5. Growing Stock Cattle, Does it Pay the Small Farmer? Fifteen minutes.
6. The Ideal Farm Home. Thirty-five minutes. Night.
7. Swine Husbandry, How Best Conducted. Twenty minutes.
8. Landlord and Tenant and Their Relation to Each Other. Twenty-five minutes.
9. Sunshine and Shadow on the Farm. Forty-five minutes. Night.
10. Selecting and Feeding Cattle in Winter. Thirty minutes.
11. The Farmer Boy and His Opportunities. Forty minutes. Night.
12. Small Fruit Growing in Connection with General Farming. Twenty minutes.
13. Farm Literature, or What Shall We Read? Thirty minutes. Night.

**O. E. Bradfute, Cedarville, O.**

1. The Modern Beef Animal, Form and Type. Thirty minutes.
2. The Modern Beef Animal, How Produced. Thirty minutes.
3. The Value of a Pedigree. Thirty minutes.
4. The Agricultural Fair. Thirty minutes.
5. An Up-to-Date Stock Farm. Thirty minutes.
6. Free Rural Mail Delivery. Thirty minutes.
7. The Calf. Thirty minutes.
8. Management of a Herd of Pure Blood Cattle. Thirty minutes.
9. Various Breeds of Cattle, Historical and Descriptive. Thirty minutes.
10. Special vs. General Purpose Cattle. Thirty minutes.
11. Why am I a Farmer? Forty-five minutes. Night.

## W. N. Cowden, Quaker City, O.

1. Is Sheep Husbandry as Profitable as Other Branches of Stock Farming? Twenty minutes.
2. How to Make Sheep Husbandry Profitable. Twenty minutes.
3. Underdraining Hill Land. Fifteen minutes.
4. Profitable Fruit Growing. Thirty minutes.
5. In the Peach Orchard for Profit. Twenty minutes.
6. Education Needed by the Farmer. Thirty minutes. Night.
7. Our Common Schools and Their Needs. Thirty minutes. Night.
8. Farming On or Off the Farm, Which? Twenty-five minutes.
9. How Taxation Affects the Farmer. Forty minutes. Night.
10. Laws Needed by Agriculture. Twenty minutes.
11. The Three Bells. Thirty minutes. Night.
12. How to Retain Fertility and How to Regain Lost Fertility. Thirty minutes.
13. Why am I a Farmer? Twenty minutes. Night.
14. What is Pedigree Worth? Fifteen minutes.
15. What Crops Shall the Farmer Sell? (Illustrated.) Twenty-five minutes.
16. Our Forage Plants. Fifteen minutes.
17. The Man With the Hoe. Twenty minutes.

## J. Al Dobie, Gutman, O.

1. Improving Soil Texture. Twenty minutes.
2. The Main Things in Swine Growing. Thirty minutes.
3. Preparing Seed Beds. Twenty minutes.
4. Shall We Breed Higher or Feed Better? Twenty minutes.
5. Barns and Outbuildings. Twenty-five minutes.
6. Training Horses for Farm Work. Thirty minutes.
7. How to Make the Small Farm Pay. Thirty minutes.
8. Small Fruits for Home Use. Twenty minutes.
9. Tile Drainage. Twenty-five minutes.
10. Character as Affected by Country Life. Fifty-five minutes. Night.

## W. G. Farnsworth, Waterville, O.

1. The Culture of Fruit by the Farmer. Twenty-five minutes.
2. Mutual Fire Insurance for Farmers. Twenty-five minutes.
3. How We Grow and Handle Potatoes. Twenty-five minutes.
4. The Growing of Small Fruits from a Commercial Standpoint. Twenty minutes.
5. Pruning of Small Fruits and Orchards. Fifteen minutes.
6. Peach and Cherry Culture. Twenty minutes.
7. How We Maintain and Increase the Fertility of Our Soil. Twenty minutes.
8. Care and Management of Farm Help. Twenty minutes. Night.
9. How and When to Spray. Fifteen minutes.
10. Partnership on the Farm. Twenty minutes. Night.

## W. W. Farnsworth, Waterville, O.

1. Can We Grow Apples, and How? Twenty-five minutes.
2. Pruning Trees and Vines. Twenty minutes.
3. The Farm Horse, His Management and Care. Twenty-five minutes.

4. Modern Potato Culture. Twenty minutes.
5. Small Fruit Culture for Home or Market. Twenty-five minutes.
6. Orchard Management. Twenty-five minutes.
7. Soil Management. Thirty minutes.
8. Spraying and How To Do It. Twenty minutes.
9. Improving and ornamenting the Farm Home and Its Surroundings. Twenty-five minutes.
10. Why I Had a Crop of Peaches in 1899. Twenty minutes.
11. Advantages of Rural Childhood. Thirty-five minutes. Night.
12. Nature Education. Twenty minutes. Night.

**C. W. Freeman, Rex, O.**

1. How Shall a Young Man Begin Farming? Twenty-five minutes.
2. Better Farming. Fifteen minutes.
3. Shall We Let Our Forests Go? Twenty minutes.
4. Why Farmers are Humbugged in Buying Fruit Trees. Twenty minutes.
5. Why Young Trees Die for Farmers. Twenty minutes.
6. What Varieties of Fruit to Plant. Fifteen minutes.
7. Some Business Requirements of the Farmer. Twenty-five minutes.
8. The Farmer's Door Yard. Twenty minutes.
9. Do Farmers Need to Organize? Twenty-five minutes.
10. How Shall the Farmer Boy and Girl be Educated? Thirty minutes. Night.
11. Can We Afford Township High Schools? Forty minutes. Night.
12. What Shall We Do With Our Boys and Girls? Forty minutes. Night.

**G. C. Housekeeper, Bowling Green, O.**

1. Rotary Farming, Why Best? Twenty minutes.
2. How to Grow and Get the Most out of a Crop of Corn. Twenty minutes.
3. Growing and Marketing Potatoes. Twenty-five minutes.
4. Fruits for Home Use. Twenty minutes.
5. Growing Fruit for Market. Twenty minutes.
6. Our Weather Service; Its Methods and Value. Twenty-five minutes.
7. The Farmer and the Public School. Twenty minutes.
8. Advantages of Farming. Twenty minutes.
9. Making Home and Farm Life Happier. Thirty minutes. Night.
10. Reading for the Farmer's Family. Thirty minutes.
11. Our Sons and Daughters. Thirty minutes. Night.

**John G. Ickis, Adena, O.**

1. Managing a Sheep Farm. Twenty-five minutes.
2. The Farmer as a Salesman. Twenty minutes.
3. Wool and Its Grades. Fifteen minutes.
4. Ohio Wool and Wool Growers. Thirty minutes.
5. "Shooting" a Farm. Twenty minutes.
6. The Farmer in Literature. Thirty minutes. Night.
7. Our Brother Farmer. Twenty minutes.
8. The Beginnings of Agriculture. Thirty-five minutes. Night.
9. The Dangers of Farm Life. Thirty minutes. Night.



**Henry S. Kelley, Geneva, O.**

1. Care of Farm Animals. Twenty minutes.
2. Sheep and Early Lambs. Twenty minutes.
3. What Constitutes a Good Farmer. Thirty minutes. Night.
4. Farm Buildings. Twenty minutes.
5. Vealing Calves. Twenty-five minutes.
6. Disposing of Rough Feed Profitably. Twenty-five minutes.
7. Garden and Fruit. Twenty minutes.
8. It Must be Gain or Loss. Thirty minutes. Night.
9. Are there Pleasures in Farming? Thirty minutes. Night.

**Geo. E. Lawrence, Marion, O.**

1. Clover. Twenty minutes.
2. Corn. Twenty minutes.
3. Small Fruits for the Home. Twenty minutes.
4. Small Fruits for the Market. Twenty minutes.
5. Wheat. Twenty minutes.
6. Mysteries and Problems Still Unsolved. Thirty minutes. Night.
7. Sowing and Reaping. Thirty minutes. Night.
8. The Farmer as a Citizen. Forty minutes. Night.

**T. C. Laylin, Norwalk, O.**

1. Fifteen Minutes in the Oats Field.
2. Fields and Fences. Twenty minutes.
3. Theory and Practice in Corn Culture. Twenty minutes.
4. Breeding and Management of Mutton Lambs. Twenty minutes.
5. The Improvement of Soil by Mechanical Means. Twenty minutes.
6. The Improvement of Soil by Fertilizers. Twenty minutes.
7. Farmers' Problems. Forty minutes.
8. What Does It Cost? Forty minutes.
9. Genius in Farming. Forty-five minutes. Night.
10. "Our Boys." Forty-five minutes. Night.

**J. A. Lehmann, Savannah, O.**

1. Leaks About the Farm. Twenty minutes.
2. Roads and Road Making. Twenty minutes.
3. A Round Year With the Farmer's Flock. Twenty-five minutes.
4. Selecting and Handling Sheep for Market. Twenty-five minutes.
5. Home Conveniences. Twenty minutes.
6. The Farmer's Library. Twenty minutes.
7. A Plea for More and Better Live Stock. Twenty-five minutes.
8. Culture and Disposal of the Corn Crop. Twenty minutes.
9. How We Handle Clover. Twenty minutes.
10. The A B C's in Feeding. Twenty minutes.
11. Give the Boys and Girls a Chance. Forty minutes. Night.
12. Agriculture and Culture. Forty minutes. Night.

**S. K. McLaughlin, Hurford, O.**

1. Breeding and Keeping Fine Wool Sheep. Twenty-five minutes.
2. The Farmer's Garden and Truck Patch. Twenty minutes.
3. Cross-Bred Yearlings for Mutton. Twenty minutes.

4. Good Roads, How to Secure and Maintain Them. Twenty minutes.
5. Agricultural Fairs, Their Use and Abuse. Twenty-five minutes.
6. Wheat Raising. Twenty-five minutes.
7. Preparing Wool for Market. Twenty minutes.
8. Corn Culture. Thirty minutes.
9. Weeds and Weed Laws. Twenty minutes.
10. How to Make the Best Hay. Twenty minutes.
11. The Farmer's Wife. Thirty-five minutes. Night.
12. The Closing Century. Thirty minutes. Night.

**H. P. Miller, Sunbury, O.**

1. The Care of Young Animals. Twenty-five minutes.
2. Feeds and Feeding. Twenty-five minutes.
3. Training the Horse. Twenty minutes.
4. The Care of a Team. Twenty minutes.
5. Growing and Marketing the Hothouse Lamb. Twenty-five minutes.
6. The Different Ways of Handling a Flock. Twenty-five minutes.
7. The Parasitic Enemies of Sheep. Twenty-five minutes.
8. Our Farming. Twenty minutes.
9. Employing Help on the Farm. Twenty-five minutes. Night.
10. The Farm as a Home. Twenty minutes. Night.
11. Bacteria. Twenty minutes. Night.

**T. J. Miller, Lepsic, O.**

1. Clover, the Farmer's Friend. Twenty-five minutes.
2. Preparation of Seedbed. Twenty-five minutes.
3. What Fruit Should the Farmer Raise? Twenty-five minutes.
4. What Fertilizers Should We Use? Twenty-five minutes.
5. Program for the Farm. Twenty-five minutes.
6. Little Things We Should Know. Twenty minutes.
7. Poultry for Profit. Twenty minutes.
8. Breeding and Feeding Cattle. Twenty-five minutes.
9. Breeding and Feeding Hogs. Twenty-five minutes.
10. Woman's Mission on the Farm. Forty minutes. Night.
11. Our Boys and Girls. Forty minutes. Night.
12. The Kind of a Man the Times Demand. Forty minutes. Night.
13. Country and City Life Compared. Thirty-five minutes.
14. Judging Live Stock at Fairs. Thirty minutes.

**Cary W. Montgomery, Newark, O.**

1. Soil Conditions Essential to Crop Production. Twenty minutes.
2. The Farmer's Fruit Garden. Twenty minutes.
3. Potatoes. Fifteen minutes.
4. Melons. Fifteen minutes.
5. Rural Amusements. Twenty minutes.
6. What Do We Owe to Our Community? Twenty minutes.
7. Marketing Produce. Twenty minutes.

**Lowell Roudebush, Owensville, O.**

1. Southern Cowpeas, Clover or Alfalfa, Which? Fifteen minutes.
2. Insect Pests and Their Enemies. (Illustrated.) Fifteen minutes.
3. Some Noxious Weeds and Methods for Destroying Them. (Illustrated.) Fifteen minutes.
4. Sheep, Several Reasons for Raising Them. Fifteen minutes.
5. Is it Profitable to Raise Horses; If so, What Class? Fifteen minutes.
6. Feeding Stock for Profit. Fifteen minutes.
7. Some Common Mistakes in Poultry Raising. Fifteen minutes.
8. Care and Management of Small Fruits. Twenty minutes.
9. Good and Bad Effects of Thirty Degrees Below Zero. Fifteen minutes.
10. The Influence of Agriculture. Twenty minutes. Night.
11. Thirty-six Hours in California. Twenty minutes. Night.

**Geo. E. Scott, Mt. Pleasant, O.**

1. Clover and Nitrogen. Twenty-five minutes.
2. Improvement in Corn and Corn Culture. Twenty-five minutes.
3. Breeding and Feeding a Swine Herd. Twenty-five minutes.
4. Cultivation of Manures for Fertilizers. Twenty minutes.
5. Breeding and Feeding a Dairy Herd. Twenty-five minutes.
6. Wheat Growing as a Practical Science. Twenty minutes.
7. Poultry for Farmers. Twenty minutes.
8. Making and Selling Gilt-Edge Butter. Twenty-five minutes.
9. Gems from Successful Careers. Thirty minutes. Night.
10. Farm Telephones, Their Cost and Benefits. Twenty minutes.
11. Our Farm, Its Advantages and Disadvantages. Twenty minutes.
12. The Physical, Moral, Social and Intellectual Status of Rural Homes. Thirty-five minutes. Night.

**John L. Shawver, Bellefontaine, O.**

1. The Farm Dairy. Thirty minutes.
2. Points for Butter Makers. Thirty minutes.
3. Feeds and Feeding. (Illustrated.) Thirty minutes.
4. Barns and How to Build Them. (Illustrated.) Thirty minutes.
5. Mutual Fire Insurance. Thirty minutes.
6. The Home and Environments. Twenty minutes.
7. Household Helps. Twenty minutes.
8. Domestic Economy. Twenty minutes.
9. Farm Accounts. (Illustrated.) Twenty minutes.
10. What Shall I Produce for Market? Twenty minutes.
11. Making, Saving and Applying Manures. Twenty minutes.
12. The Farmer's Fruit Supply. Fifteen minutes.
13. A Plea for the Forests. Twenty minutes.
14. Choice of Pursuits. Thirty minutes. Night.
15. Seedtime and Harvest. Fifty minutes. Night. (For the young people.)

**A. Shirer, Box 293, Dayton, O.**

1. Making, Saving and Applying Manure. Twenty-five minutes.
2. The Clover Problem. Twenty-five minutes.

3. Strawberries. Twenty minutes.
4. Early Potatoes. Twenty minutes.
5. The Farmer's Garden. Twenty minutes.
6. Poultry. Twenty minutes.
7. Cost of Production. Twenty minutes.
8. Root, Stem and Leaf. Twenty minutes.
9. Our Public Roads. Twenty minutes.
10. Economy. Twenty minutes.
11. Agriculture in the Public Schools. Twenty-five minutes.
12. Wayside Notes. Twenty-five minutes. Night.
13. Past, Present and Future. Thirty-five minutes. Night.

**S. H. Todd, Wakeman, O.**

1. Deep Cultivation vs. Shallow Cultivation. Twenty-five minutes.
2. Buying and Using Fertilizers so as Not to Lose Money. Twenty-five minutes.
3. Fifty Years' Experience in Raising and Marketing Corn. Twenty-five minutes.
4. On Which Side of the Fence Am I Farming? Twenty-five minutes.
5. Care and Management of Sheep to Avoid Disease. Thirty minutes.
6. The Farmer's Garden. Twenty minutes.
7. The Farm and the Hired Man. Twenty-five minutes.
8. Poultry and the Egg Market. Twenty minutes.
9. Should the Farmer Raise Pure-Bred Animals for the General Market; If Not, Why? Twenty minutes.
10. Animal Formation Decides Its Purpose. (Illustrated.) Thirty minutes.
11. My Experience with Clover. Twenty minutes.
12. Which of the Two is the More Important Crop, the Boys and Girls or the Stock? Sixty minutes. Night.
13. Slippery Places of Life. Fifty minutes. Night.

**E. Trumbo, Cranberry, O.**

1. Things Which Farmers Ought to Know. Twenty-five minutes.
2. Does the Farm Pay? Twenty-five minutes.
3. Can We Keep up the Fertility of the Soil and Sell all our Farm Products? Twenty-five minutes.
4. The Advantages of Farm Life. Twenty minutes.
5. Crops and Stock as Influenced by Seed, Soil and Climate. Thirty minutes.
6. Crimson Clover. Fifteen minutes.
7. County Fairs. Twenty minutes.
8. How We Learn to Think. Forty minutes. Night.
9. My Experience with Melons and How to Raise Them. Twenty minutes.
10. Farmers' Institutes and the Benefits of Association. Twenty minutes.
11. Progressive Agriculture. Forty minutes.
12. Tree Planting and Why. Fifteen minutes.
13. How We Should Use Our Surplus. Fifteen minutes.

**R. H. Wallace, Chillicothe, O.**

1. The Sowing and the Reaping. Forty minutes. Night.
2. Feeding for Profit. Thirty minutes.
3. Heredity in Animal Life. Twenty-five minutes.

4. Skill in Farming. Thirty minutes.
5. What Constitutes a Farmer's Education? Forty minutes. Night.
6. The Jersey Cow. Twenty-five minutes.
7. The Farm Dairy. Twenty-five minutes.
8. Excessive Freight Rates—Causes and Cures. Twenty-five minutes.
9. Prehistoric Races of this Country. Forty minutes. Night.
10. The State Board of Agriculture and Farmers' Institutes. Thirty minutes.
11. Will the Future King of the Country be Corn, Cotton or Wheat? Twenty minutes.
12. What Shall be Done with the Surplus of the Farm? Thirty minutes. Night.

**A. L. White, Norwich, O.**

1. Confidence in Our Work. Twenty-five minutes.
2. The Hen and Her Family. Fifteen minutes.
3. Swine Raising. Fifteen minutes.
4. Skilled Labor on the Farm. Fifteen minutes.
5. Growing and Marketing Peaches. Twenty minutes.
6. Corn. Twenty minutes.
7. Field Management. (Illustrated.) Twenty minutes.
8. Our County Fairs. Fifteen minutes.
9. Old and New Methods. Fifteen minutes.
10. Can a Young Renter Hope to Own a Farm? Twenty minutes.
11. The Sampson Fox. Twenty minutes. Night.
12. Children of the Farm. Thirty minutes. Night.
13. Shall We Farm? Forty minutes. Night.

**C. G. Williams, Gustavus, O.**

1. Fighting a Drought. Twenty-five minutes.
2. Why I Built a Silo. Thirty minutes.
3. Feeding the Dairy Cow. Thirty minutes.
4. What Crops Should the Farmer Sell? Twenty-five minutes.
5. My Experience with Potatoes. Twenty-five minutes.
6. The Round Year at Elmwood. Thirty-five minutes.
7. Commercial Fertilizers. Thirty minutes.
8. A Working Library for the Farmer. Twenty-five minutes.
9. What About Our Schools? Thirty minutes. Night.
10. The Farmer's Relation to His Fellows. Thirty minutes. Night.

**J. E. Wing, Mechanicsburg, O.**

1. Suggestions on Clover Seeding. Twenty minutes.
2. What About that Thin-soiled Field? Twenty minutes.
3. Where Shall I Sow Alfalfa? Fifteen minutes.
4. Some Old Crops that are New to Us. Twenty minutes.
5. The Making of the Shepherd (How to Keep the Boys on the Farm).  
Twenty minutes.
6. "Feed My Lambs." Thirty minutes.
7. Barns and the Use of Them. Thirty minutes.
8. The Cattle on the Thousand Hills. Thirty minutes.
9. Suggestions to Cattle Feeders. Thirty minutes.
10. Little Grains of Sand. Thirty minutes. Night.

PAPERS READ

AT

FARMERS' INSTITUTES 1899-1900

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Forwarded to the Secretary of the Department of Agriculture for Publication in the Annual Institute Report.

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THE BEEF ANIMAL—PAST AND PRESENT

By J. P. HINE, Shinrock, O.

[Read at the Farmers' Institute held at Berlin Heights, Erie County, December 18 and 19, 1899.]

I appreciate the fact that this is an essentially fruit growing district, and consequently we are not so much interested in the beef animal as in the production and disposition of fruit or perhaps in the dairy cow, speaking of this immediate vicinity. But we are surrounded on the north and west by fertile grain and stock growing farms and on the south and east by lands preeminently fitted for pasturing and the production of hay. No permanent and lasting success can follow general farming that does not include to a considerable extent the production or maintenance of domestic live stock. The farmer who sells his grain and hay is dealing in raw materials, is robbing his land of its virgin fertility, a part of which he must return in one form or another at some future time, and he and his farm will gradually become poorer. He is constantly drawing upon his principal, while, on the other hand, he who markets his grain and hay in the most concentrated form or in live stock products is dealing in finished products and is constantly adding fertility and productiveness to his farm. He not only clips his interest coupons annually, semiannually, or even quarterly, but is constantly adding to his principal as well. He is continually improving his plant. In our fruit we are producing the highest type of the finished product, not only because it is so perishable as to require the greatest skill, care and dispatch in marketing to the best advantage, but also because it is the product often times of years of most careful attention—of planting or setting trees, of cultivation, of thoughtful care and attendance. Given the same time, careful thought, energy and intelligence the field for the production of high class live stock is boundless. In saying this I speak not from the standpoint of the breeder of pure bred live stock to be sold as breeding stock for the improvement and betterment of the general stock of the country—his position is analogous to that of the seedsman or nurseryman—but from the standpoint of the producer who sells his product upon the open market. Among our domestic live stock the

beef animal ever has been and ever will be an important factor. So, with these few introductory remarks, I will claim your attention for a short time to the subject in hand.

In describing the beef animal of the past I shall not attempt to give a history either ancient or modern of any particular breed or class of animals, nor for my purpose of comparison with the modern or up-to-date animal will it be necessary to go back more than from twelve to twenty years, to the time when the noble short-horn (the great dual purpose cow of the past) was pretty thoroughly scattered over the farms of the country. Then a shipper could drive around among his neighbors and pick up a car load of nice fat steers to ship to market occasionally; then a farmer desirous of feeding a bunch of steers during the winter could in a day or two's search find as many as he needed that would turn his corn and rough feed into beef and tallow at a fair profit. Those were good times for the stockman when he could drive around and chat with his neighbors and incidentally pick up a few good money-making steers. What did the market demand at that time? The best that could be produced, the same as at present. They were large, with large, heavy bone, and when very fat as the market required carried heavy deposits of tallow both externally and internally, not juicy, edible flesh intermingled with sweet, palatable fat, but tallow. Nature stored up this superabundance of heat and food against a day of adversity and want, and, as the animal was built with a large frame and was largely hollow, he had abundant room, safety deposit vaults, if you like, and as he accumulated a little above the necessary wants of the day he deposited his surplus in this bank, subject to future order. We wanted that tallow to light our homes, the arts and industries wanted it, until tallow was nearly or quite as valuable as edible meat. Not so today, petroleum, electricity, cotton seed oil and other cheap and abundant products have almost entirely displaced it.

About this time the importation of various other breeds of cattle was attracting considerable attention, not only the beef breeds of England and Scotland which were destined to greatly modify the type of the beef animal, but also the little cow of the Channel Islands and the big-boned, rough cow of the Netherlands were fast invading our farms. The bulk of the imported beef animals went to the middle west—the Mississippi valley—to increase the quality and numbers of the beef stock, while most of the importations of the dairy breeds were in the eastern states. The ranches and ranges of the great west were developing rapidly and the ranchmen thought they could raise there nothing but cattle and perhaps a few half-wild horses, until the farmer of Ohio, seeing himself engulfed as it were by the overwhelming competition of the better quality of beef produced in the corn states, and the seemingly unlimited production of the great ranges, turned his attention mainly to sheep and wool, succumbed to the craze of dairying and allowed himself to be overrun by the little Jersey. Now, please do not misunderstand me; I am a great friend to the Jersey in her proper place. In her purity she is the highest example of the breeders' art and skill, she is, most properly speaking, a "highly educated machine," but aside from her place as a nice little family cow, she is strictly a dairyman's machine, and unfortunately she cannot be made acceptable to the butcher, so that the farmer, and not the butcher, gets all the dairyman's culla. Unwittingly she has worked an almost irreparable injury to the farmer's stock in general. We farmers cannot all be successful dairymen, we know that, for we have all tried it; nor can we all be successful fruit growers, we have also been rrying for some of those big profits that were once the horticulturist's, and the horticulturist, as well as the dairyman, might well wish to see the return of the beef animal and a general revival in live stock production, that the pressure of the destructive competition—a competition that has failed to bring;

any profit to the farmer and has been ruinous to the other two—might be somewhat relieved.

Following the heavy importations of the distinct beef breeds into the middle states of the west, the corn states, or, more properly speaking, the Mississippi valley, which takes in part of Ohio, there was great activity in beef production, and the number and quality of the beef animals increased rapidly, reaching its highest point perhaps in the years 1885 and 1886. At this time the markets began to be unsettled and uneasy under the combined production of the feed lots of the corn states and the ranges of the great west, growing more and more uneasy until, with the financial panic which started in the early nineties, the bottom seemed to have dropped completely from the beef producing business. Everybody wanted to get rid of his cattle from the Alleghenies to the Rockies, crowding vast numbers of every breed, age and condition upon an already heavily overstocked market. Many turned their attention to raising horses, some to sheep—the English mutton breeds of sheep were growing very popular—while many others, seeing that the dairymen, by the use of improved methods and improved breeds of cattle, were making good profits, invested in a few dairy-bred animals—naturally getting the dairyman's culls—and as there was little encouragement in the line of beef production these dairy-bred cattle were indiscriminately crossed and mixed with what remained of the beef-bred cattle throughout the land.

The result is that we have neither a dairy animal that can be profitably employed as such nor a beef producing animal. The pendulum having swung the other way, we are now trying to use this conglomeration as a foundation upon which to build our beef animals with the aid of beef-bred sires.

As already stated, many even of the ranchmen turned their attention to horse raising; we all know the result. Many turned their attention to sheep; we know the result here also in so far as Ohio is concerned, but the ranchmen found the sheep thrived in large numbers on the western plains that had proven too dry and arid for the profitable production of cattle. So the flocks of the ranges continued to increase while our Ohio flocks dwindled, until Texas soon became the banner sheep state. And perhaps few of us know that within the past year or two the state of Washington has wrested the palm from her southern sister, and many other far western states have become heavy producers of wool and mutton. As we are wont to shrink from this competition in beef production, we must remember that now they are more than equal competitors in wool and mutton production also.

How then are we to meet this competition of the cheap lands of the far west? England is a practically free trade country, all of our grains and meats enter her markets free of duty, yet the live stock industry has ever been the mainspring of her agricultural prosperity; and we also will find our salvation only in better stock and better and cheaper methods of feeding, better and closer application of our knowledge of breeding and feeding and a strict adherence to the beef type (even as the successful dairyman must adhere to a strictly dairy type).

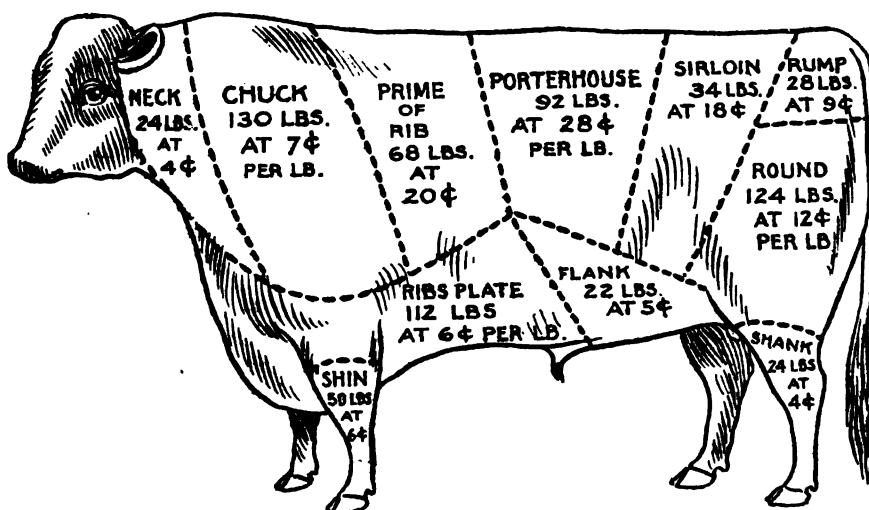
Having given you a somewhat disconnected review of the kind of cattle we have had, and of the kind we now have mostly with us, I will endeavor to give you some idea of the beef animal that the markets demand today, such as some of the more progressive feeders are furnishing at a good profit.

The ideal beef form is low, broad, deep chested, with a smooth, square back and a thick, even covering of good meat on the parts that give the high-priced cuts. Porterhouse steak sells at from twenty-four cents to twenty-eight cents per pound when necks sell at four cents and round steak at twelve to fourteen cents; prime rib roast sells at from eighteen cents to twenty cents when flank



brings but from four to six cents; in the New York and Chicago markets choice rib and loin cuts command about four times the average price paid for the rest of the carcass. Hence broad and well covered backs and ribs are absolutely necessary for the best results. There are too many scrubs fed. The same feed put in good, well bred cattle of good beef form would produce from 25 to 40 per cent. more money, which means the difference between a handsome profit and a loss, or the difference between success and failure. Avoid rough, raw-boned animals. The scrub and dairy types are rough and angular and when fattened do not put the fat into the tissues of the high-priced cuts of steaks and roasts as do the beef breeds, but store up internal fat and suet which is worth about four cents per pound. This is why the dairy type and scrub can never be made to look plump and smooth, no matter how well they are fattened. A ripe, juicy, highly-flavored cut, such as is demanded by the well-to-do families, good hotels and the better class of restaurants, must have the fat deposited evenly throughout the tissues, or the meat must be nicely marbled, as we say. The demand, then, is for young cattle of medium weight, though well fattened and ripe. Their meat is better and the market pays a premium for this class.

I have spoken here of the beef type and the beef form. The accompanying illustration and table will explain more fully:



Neck .....	24 lbs. at 4c.....	\$ 0 96
Chuck .....	130 lbs. at 7c.....	9 10
Prime of rib.....	68 lbs. at 20c.....	13 60
Porterhouse .....	92 lbs. at 28c.....	25 76
Sirloin .....	34 lbs. at 18c.....	6 12
Rump .....	28 lbs. at 9c.....	2 52
Round .....	124 lbs. at 12c.....	14 88
Flank .....	22 lbs. at 5c.....	1 10
Rib plate .....	112 lbs. at 6c.....	6 72
Shin .....	50 lbs. at 6c.....	3 00
Shank .....	24 lbs. at 4c.....	96

708 lbs.

\$84 72

This makes no account of hide, tallow, suet, tongue, heart, liver, oil, fertilizer and all other by-products, none of which are wasted in the large

slaughtering plants, and which alone would make a handsome profit for the slaughterers. The sketch is that of an average thirteen hundred pound steer as cut up on the Chicago markets and the price each cut brings in the best markets of our large cities. Our local butchers cannot obtain as large prices for the best cuts, but get more for the cheaper cuts, so that the difference in the price of the different cuts is not so marked.

You can see by the illustration that most of the value is above a line drawn horizontally through the middle of the animal. This will explain why one steer of a given weight of the proper type, flesh and finish will sell for from two to three cents per pound more, live weight, than others of equal weight and equally well fattened, perhaps, but not of good beef form or depth of flesh in the desirable cuts. The shrunken dressed weight of an average steer would be in the neighborhood of sixty per cent.; with a scrub or dairy built steer the percentage would be less, while with an extra good beef steer it may run ten per cent. higher. The proportion of the desirable cuts of the dressed carcass would be less in one than given in the accompanying sketch, while in the other the proportion of high-priced cuts would be greater than in the illustration, this adding doubly to the value of one over the other.

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## GETTING OUT OF THE RUTS IN THE FARM DAIRY.

By A. F. LIGGETT, Decatur, O.

[Read at the Farmers' Institute held at Cherryfork, Adams County, January 26 and 27, 1900.]

We have been in the dairy business, in a limited way, for twenty-five years, and for the last fifteen years have been trying to get out of the ruts as the way was opened by knowledge gained from the agricultural and dairy press of the experience of others noted therein. The first move in this direction was the substitution of a distinctive dairy breed, the Jersey, for a beef breed, the shorthorn. We were told, at a Farmers' Institute held recently, by one of the state speakers who is a dairyman, to suit ourselves as to the matter of breed, but he immediately took away that permission by saying that if he wished his milk watered he could do it himself, but for the fact that his customers might find minnows in it. He is a Jersey man.

Having secured the desired cow, the next object was to provide suitable quarters for her both as to comfort and cleanliness. The latter, which is emphatically *the* essential in dairying, was accomplished by flooring the stable with wood and dividing by partitions into stalls about four feet wide with a manure gutter dropped eight to ten inches lower than the platform on which the animals stand. The partitions are necessary to compel them to stand at right angles with the gutter. The Newton cow tie is used and is decidedly the best contrivance we have ever seen for the purpose. It is fastened to the manger, which in our stable is movable and may be slipped backwards or forwards on the floor to suit the length of the cow. It compels her to stand with her hind feet at the edge of the gutter and draws her forward when lying down, at the same time giving perfect freedom to the head. We call especial attention to this manner of fastening to all our stable visitors, as it secures, in a perfect manner, a most desirable end.

The providing and preparing the feed has claimed a great deal of attention and has undergone many changes in the line of better methods during the fifteen years; but in order not to be tedious and lengthen this paper unduly, the present

method only will be given. The hay, mostly clover, is harvested and the corn cut up before becoming overripe. The hay is housed as quickly as possible to prevent sunburn and rain and usually without cocking. The corn is husked as soon as it will do to crib and the fodder bundled and mowed away as compactly as possible. The bundling and tying economizes space, makes it nicer to handle and renders it nearer air-proof, thus preventing the escape of the essential oils which give it flavor and make it palatable. If our animals could reason and speak and we were to ask them how they like corn-fodder after standing out all winter, or overripe and bleached clover-hay, they no doubt would answer by asking how we like stale vegetables in the spring of the year, or sausage meat without seasoning. Of course they will eat such stuff, before they will starve, but I do not believe they enjoy it any better than we would the foods mentioned. Again, the flavor of the food affects not only the palate of the cow but her product (the butter) as well, as may be proven by feeding her turnips or other similar foods. In the line of adopting all the improved methods as far as practical, suggested by the best dairy writers and advertisers of dairy machinery, a power feed-cutter of best design was purchased several years ago. The size and construction is such that the entire machine is in the barn, and valuable time is thus utilized that otherwise would be lost on account of bad weather. All the rough feed goes through the cutter. A half day's run prepares enough to supply eight or ten head for a week. The corn is also ground in an ordinary farm sweep mill.

The present daily ration for each cow is six pounds mixed hay, mostly clover, five pounds corn and cob meal, four pounds bran, all mixed, lightly salted, and moistened with hot water, covered closely and allowed to steam some hours before feeding; in addition to this they are given all the dry chaffed corn-fodder they will eat, which is about six pounds. A more perfectly balanced ration could be made by increasing the bran and adding a little oil meal, but at an additional cost. Here the objection is likely to be raised, "Oh! that is too much trouble." That is not the question, but whether it pays is what we are to consider, and to settle that will be the next object. A noted Indiana state institute lecturer and large dairyman, who feeds as I have indicated in connection with ensilage, lately asked his men, some of whom have been with him five years, how much they thought they saved by cutting their corn stover and hay and soaking with water before feeding, and their answer was, "We save two-thirds." Then he asked them how much longer they thought it took to feed that way, and their reply was that they would rather feed that way than the old, because of the less amount of feed to handle and because they had no long stalks in the way and the manure was better. My own experience, after years of trial, backed by the testimony of one of my most observant and careful neighbors, is that fully one-half is thus saved. By actual weight and count, in one of our most successful years, our cows were wintered on eight hundred pounds of hay, twenty-five shocks of corn-fodder, fifteen bushels of corn and five hundred pounds of bran each. And at the present time there remains to be fed this season two-thirds of the fodder from six acres of corn, and thirty bushels out of forty-eight set aside for the cattle. The daily ration at present costs nine cents for each cow. Fifty cents saved on each dollar, or sixty-six cents according to the Indiana man, pays for a good deal of trouble, and this trouble is more than balanced by the quality and condition of the manure. We thoroughly clean the stable each morning before milking, and cover the gutter floor with sawdust and litter from the platform, so that a woman need not soil her shoes and skirts, though it is rarely a woman has occasion to enter the stable, as the milking is done by the men. The sawdust and litter serve, also, to keep down the odors that would otherwise taint the milk.

The management of the cream and churning is a very important matter. Some of us, particularly at this season of the year, keep so few cows that several days must elapse before a churning is gathered. The old custom of keeping the cream vessel near the fire for several days and adding to it daily destroys the possibility of making good butter, as the first put in has become rancid before the last is added. The cream should be kept as cold as possible without freezing until a full churning is gathered; then, twelve to eighteen hours before churning, a "starter" added, which may be a little buttermilk from the last churning or made from fresh milk, or bought in powder form; then warmed up to seventy-five or eighty degrees, stirring often till sufficiently ripe or acid, which may be known by its running from the stirring implement with a smooth, velvety appearance. The flavor of the butter depends largely upon the degree of the acidity of the cream, but this is also affected by the food consumed. The cream should be churned at from sixty-two to sixty-four degrees in winter and cooler than that in summer; a dairy thermometer is indispensable. The butter should not be worked so much as to destroy the grain and give it an oily and putty-like appearance, but a roll of it when broken in two should show rough edges where broken like a piece of tallow.

Until about three months ago we used the shallow and deep setting gravity systems combined. Ice or very cold water is necessary with the deep setting for best results, as the milk will sour in hot weather before the cream all rises. We are now using the centrifugal system of separation. After reading the claims of the manufacturers and users of this system for a year or more we bought a separator with much hesitation and began its use. It fully justifies the most extravagant claims of its admirers and is the longest step we have ever taken to get out of the ruts. In contemplation of this purchase the milk was weighed for five consecutive weeks under the old system to enable us to determine accurately whether the investment would be a paying one or not. We found that it required twenty-five and one-half pounds of milk to make one pound of butter. Under the new system for a like period we have made a pound of butter from seventeen and one-third pounds of milk, a gain of 32 per cent. All skimming, washing, airing and handling of crocks and pans is done away with and only the cream vessel has to be cared for. There is no heating of milk for calves, but the separated milk is now fed while fresh and warm, to them and to the pigs and chickens, to their evident delight and advantage.

Butter is the least soil-robber of any of our products, a ton of it taking only fifty cents worth of fertility, while a ton of clover hay sold unfed takes nine dollars' worth. This statement shows the importance of feeding the clover, especially to milch cows, as it is an almost balanced dairy ration within itself. The sale of butter yields a steady income, and in connection with poultry products, the two going well together, grocers' bills are promptly met, pin money provided for the wives and daughters, and bank and loan deposits increased.

But good butter makers have a grievance that should be righted. Go to the cellar of your grocer, as I have done, and note the grades and shades from the color of snow-white to that of pumpkin, and say if you think it just that it should all go at a uniform price. There is no more reason that it should than there is that tobacco, hay or any other farm commodity should do so. I have heard grocers say that a distinction should be made, but they could not do it for fear of losing custom. Let us all aim to make our butter so perfect that we can consistently demand that its merits be recognized and adequately rewarded.

## DAIRY FARMING.

By GEORGE CREHORE, Sheffield, O.

[Read at the Farmers' Institute held at North Ridgeville, Lorain County, January 22 and 23, 1900.]

Successful dairy farming depends on what kind of cows you keep, and how you keep them; that is, neither a poor cow well kept, nor a good cow poorly kept, will make much profit. This seems a simple proposition, but the breeding, selection, care and feeding of the dairy cow is a science not to be mastered in one day. Looking back over the twelve years we have made dairying a specialty, we note, among others, three great mistakes, namely, buying instead of raising our own cows, the use of a cold, draughty and inconvenient barn, and feeding too expensive, and unsuitable feeds.

The profitable dairy cow is one bred for dairy work. It is her business to turn large quantities of feed into milk. Some cows do this well, some are inclined to use a larger proportion in making flesh, and what some cows do with the feed they consume is hard to tell. The well known great difference in cows in this respect is no doubt due to heredity; that is, a cow is a good or poor performer at the milk pail because she inherits that trait from some ancestor. It is probable that development has considerable to do with individual performances, but you can never make the common farm horse trot a mile in 2:10, neither can you make phenomenal milk and butter records from a cow whose ancestors were scrubs. The reason why the country is so full of poor cows is because they have been so poorly bred. That good dairy cows are not confined to any one breed is very evident, and from among the dairy breeds a dairyman should select what comes nearest his ideal; and by using a pure bred male of excellence in individuality and pedigree, and raising the heifers from his best cows, he may soon have a herd of choice cows that will have cost much less than to have bought them, for it takes quite a sum to buy a really choice cow. The man having a herd of choice cows is not taking advantage of his opportunities if he is not by careful breeding having them reproduce themselves, or something better, in their offspring.

A cow requires a certain amount of food for maintenance, and from feed consumed in excess of that amount comes profit. It follows then that the more food a cow can eat and digest, the more profit, provided, of course, that the food is not too expensive. Economical milk production calls for a feeding ration that will produce a large flow of milk at a moderate cost. As a rough feed, corn preserved in the silo will make more feed per acre than anything else that can be grown on the farm, and clover, all things considered, is the next best. A moderate crop of ensilage corn will make ten tons per acre, a good crop fifteen, and on very good land with a favorable season twenty or more tons per acre can be grown. Allowing forty pounds per day, a good crop of corn will feed a cow seven hundred and fifty days, or nearly two years, and if you add five pounds a day of rice, clover hay, and about eight pounds of gluten feed, you have a cheap and at the same time excellent ration for the dairy cow, and, to produce a large quantity of good milk, second only to the very best June pasture. Clover is a splendid feed, but it takes three acres of it to go as far as one acre of corn, and its market price is too high to be used largely for making milk. We use a little to add variety to the ration. Ensilage corn can be grown and siloed at a total cost of one dollar and fifty cents per ton, or three cents for forty pounds; five pounds of clover are worth two and one-half cents, and eight pounds of gluten, six and three-fourths cents, making a day's feed cost twelve and one-fourth cents.

We recommend gluten feed, because the scientific feeding standard calls for two to two and one-half pounds of protein in the daily ration for milk, and forty pounds of ensilage contains less than one-half pound. But eight pounds of gluten contains two pounds of protein, enough to balance the ration. We could get the same amount in sixteen pounds of bran, but this is more than an ordinary cow can digest, besides costing considerably more.

We formerly fed bran and middlings with ensilage, and while fresh cows did fairly well, after a few months they would shrink in milk and grow fleshy. We know now that our ration was forty per cent. short in protein. We have repeatedly noted an increase of twenty per cent. in milk when substituting gluten for bran and middlings, pound for pound. Cows can be kept in this way fully as cheaply as on hay and other rough feeds, without grain; for hay has a market value and anything that will take the place of hay has a farm value equal to the hay it will take the place of.

We favor feeding some grain, even on good pasture. Cows will give more milk, and keep in better condition to withstand the heat and flies of July and August, for having had a little grain through May and June, and cows expecting grain, are always ready at milking time. It beats a dog for bringing the cows up. We also find that it pays us to have some green feed ready to feed before pastures get very short, feeding it so as to encourage the cows to take to the share through the heat of the day, and let them take the pasture, if there is any, in the cooler parts of the day.

We believe in continuous winter stabling under proper conditions, particularly with reference to ventilation, warmth and light. It takes more coal to fire an engine in cold than in warm weather. On the same principle it takes more feed to maintain a cow in a cold barnyard than in a warm barn.

Can we sell milk and increase fertility? Yes, rapidly, if we take advantage of opportunities. Fortunately, the feeds we need to buy for economical milk production, are, after feeding, rich in manurial value. Milk is over ninety per cent. water and fat, neither of value as a fertilizer, so when we sell one hundred pounds of milk, we sell less than ten pounds of solids having value as a fertilizer. While to produce one hundred pounds of milk we feed about forty pounds of purchased grain. Under these circumstances, there is no doubt more fertility coming on, than going off the farm. This method, combined with the free use of clover, we feel sure has nearly doubled the productiveness of all the older portion of our farm.

The best results will not be had by standing stock on leaky floors, where a large proportion of the best and quickest acting manure is worse than wasted, by running through to contaminate the soil beneath, and create bad odors. Time is money, and we conclude that we cannot afford to handle manure twice if once will do as well, and practice loading directly from behind the cows, and spreading at once on sod intended for corn, believing that the loss from washing will not be more than from overheating when put in heaps. Our manure is thus disposed of when it costs practically nothing to do it, saving much valuable time in the spring or summer. We spread as evenly as possible and rather thinly, as a heavy application of strawy manure hods both frost and moisture, and thereby retards work in spring.

In making our estimate of the cost of ensilage per ton, we charge five dollars per acre for rent of land, three dollars for plowing, fitting and planting, and one dollar for any hand work necessary to keep the crop free from weeds, or six dollars per acre for growing the corn. Crediting all labor at one dollar and fifty cents per day, and cutting with harvesters at one dollar and fifty cents per acre, it cost us seven dollars per acre to silo our crop the past season. This

makes the whole cost, including rent of land, eighteen dollars per acre, just one dollar and fifty cents per ton if the yield is twelve tons per acre.

In silo building, we would caution against having too much feeding surface. Get capacity by adding to height. Ten square feet of surface per animal is as much as is safe, to avoid waste, and we prefer less. We contemplate building a silo for summer use, with not over five feet of feeding surface per cow.

A good crop rotation for the special dairy farm is a three-year one, of ensilage corn, wheat and clover. We believe that in a series of years we can raise wheat cheaper per bushel, than by plowing and fitting the land especially for the wheat crop.

In conclusion let me say, dairying requires plenty of hard work and close attention to details, but the man who does it intelligently may be sure of improving his farm and having a herd of cows that will bring him a good price if he ever wants to sell them.

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### THE CARE OF MILK.

By GRANT HAVENS, Sunbury, O.

[Read at the Farmers' Institute held at Sunbury, Delaware County, January 31 and February 1, 1900.]

Few farmers realize the importance of the proper care of milk. They seem to have the idea that sweet milk is necessarily good milk, and all that is necessary on their part to the production of good butter and the success of the creamery, is to deliver their milk at the creamery in a sweet condition. Sweetness seems to be the gauge. If the milk is sweet the farmer insists on its acceptance, and in most cases the man at the weigh-can allows it to pass, in fact a great many butter makers seem to have no other criterion than sweetness by which to accept and reject milk at the factory. To such an extent is this true that creamery boards or their managers have contracted with prospective butter makers on this basis. They have in numerous instances stipulated that the butter maker should have the power to reject all milk which is in his opinion unsuitable for the production of fine butter.

I was reading a few days ago of a butter maker who agreed with the managers of an Iowa creamery that he would make western extra butter from any milk that was brought to the factory in a sweet state. So sure was he of his ability, after attending the Iowa Dairy School, that he agreed to forfeit one hundred dollars in case of failure. Well, he ignominiously failed, and the board took pity on him and kept only seventy-five dollars of his money, and now I suppose both the butter maker and the board are in ignorance as to the cause of his failure. Again, I recall the Sioux Falls convention of the National Butter Makers. Where there were six hundred exhibits only thirty-six scored high enough to class as Western Extra; must we suppose that the other five hundred and sixty-four butter makers took in sour milk from which they made their exhibition butter? Oh, no! Every drop of milk that was taken in at the different factories that day, you may rest assured, was sweet. Now, what does this prove? It simply proves that the notion that sweet milk is of necessity good milk is most deceptive. There is something more than sourness that you must guard against. To be candid, if it were possible for the separator to skim sour milk, that is milk that possessed no other objectionable features than mere sourness, that in itself would be no bar to its acceptance at the weigh-can. Now, understand me. I am not advocating the taking in of sour milk at the factory. But a butter maker in order to produce fine butter is compelled to cultivate sourness (he calls it "acid producing bacteria") in conjunction with his flavor producing bacteria. From this it is evident that if your milk was a little sour when delivered, that is,

if your milk did contain some acid producing bacteria and was free from objectionable flavor producing bacteria, there could be no other objection to it than that the separator could not handle it. Why, then, is not all sweet milk good milk for butter making purposes?

In order to fully understand this it is essential to remember several things. We have learned that milk, while yet in the udder of a cow, is composed of water, casein, fat and a few other ingredients. We have also learned that as soon as milk has been drawn from the cow it becomes impregnated from the atmosphere with a large number of vegetable cells, called by scientists bacteria. We have also learned that these bacteria are of several varieties and that they differ greatly both in origin and function. Some of them have the power to produce sourness; others produce aromas or pleasant flavors; others again have the power to produce decay. We have further learned that the decay producing variety is not only more numerous than its neighbors, but possesses a greater power of endurance, and according to the evolution idea, would be termed the fittest to survive, while for butter making purposes it is certainly the unfittest. We have also learned that nearly all of these varieties of bacteria lie dormant in the milk when the milk is cold; especially is this true of the variety that produces sourness. We have further learned that if you cannot get your milk to the factory shortly after it is milked you must get the animal heat out of it in order to make it keep. This is simply stating the truth backwards. If we could bottle up the milk direct from the cow's udder before it becomes impregnated with bacteria from contact with the atmosphere, there would be no need of cooling it, or to get the animal heat out of it, because there would be nothing in it to sour it. We cool to retard the acid producing bacteria and not to get the animal heat out. We have also learned that the variety of bacteria causing decay comes from filth and dirt and from other decomposing substances. They abound in the manure in stables, in barnyards, in hog-pens, and in all places where things rot. They are death to milk and they perform their functions with unerring precision wherever they are allowed entrance to it. We have further learned that the atmosphere, the morning breezes and the evening zephyrs are their vehicles of transportation.

From the foregoing observations it must be apparent that the mere preserving of the milk in a sweet condition is not sufficient for the production of prime butter. It must be evident to every candid mind that it is more essential to exclude from your milk those decay producing bacteria that swarm in every nook and corner where your milk stands than it is to keep it sweet. I am, of course, in favor of airing the milk, but I am not in favor of airing it in the barn, or in the barnyard, or in any place where the bacteria from the hog-pens can blow over it. When the milk cannot be both cooled and aerated, it can certainly be aerated, as that does not require water. When aerating, be careful that it is done in a good atmosphere, as it is possible to do the milk more harm than good if the atmosphere is impure. When cooling, set the cans in cold water and agitate the milk; a tin disc four inches in diameter with a galvanized wire handle about thirty inches long and used like a churn dash is an excellent device to agitate milk. Have a wooden vat made a few inches wider than the cans and deep enough to have the water come as high as the milk in the cans. With frequent agitations during the time of milking, the milk can be thoroughly cooled with but little time spent about it. The night's and morning's milk should not be mixed; they should be kept in separate cans; if from any cause it is necessary to mix the two, they should be thoroughly cooled first. Milk should be delivered at the factory at a temperature of 60 degrees or below. This is an important part of the patron's work, as the creamery cannot make fine butter from bad milk. It is a part of the work that patrons are inclined to neglect. If you have



your milk in a good atmosphere leave the covers off the cans, but if the air is bad leave the covers on, or what is better, remove it to some place where the air is good. Very few farmers realize how readily milk absorbs odors.

To unbelievers I would say, to convince you, take an open dish with milk in it and put in some place exposed to bad odors for a few hours; then warm the sample of milk to a temperature of 110 or 120 degrees, and you will find that a person who is acquainted with the odor it has been exposed to can tell you where it has been. There are plenty of places where you can put this milk to make the test, for instance in the vegetable cellar, or you may set it away with the kerosene oil can. I advise all who are skeptical on this point to try it. Do not say you do not believe it; that proves nothing. I once traced bad flavored milk to a corn crib; the milk had been left in the corn crib over night and delivered at the factory in the morning. I noticed on raising the can cover a very unpleasant odor. I took out a sample of this milk in a tin cup and refused to take about one hundred pounds; the morning's milk was all right and was kept separate from the night's milk and of course I allowed it to pass. I set the sample of milk I had taken out over a steam jet and allowed it to warm to about 100 degrees; the odor was that of a mousy corn crib. The patron said he had set it in the corn crib. Again, I have traced bad flavored milk to the cow stable. The patron had been in the habit of taking his cans to the stable and setting them in the part where he milked his cows. This should never under any circumstances be done; it would be much better to leave them out in the open air on the manure pile; it would certainly be no worse.

I think I have given enough facts about the susceptibility of milk and the next thing I believe in importance are the milking utensils and milk cans. You cannot be too particular in cleaning and airing them. After washing them with a good solution of water and soap, rinse them with boiling hot water, air them with the open end toward the sun, rinse them out in the evening with cold water and they are again ready for use. No longer ago than last summer while taking a pleasure ride through the country, I noticed quite a number of cans sitting out in front of several different houses of farmers, evidently just as they were left by the hauler, with the skim milk in them and the lid closed tightly on the cans, as late as five o'clock in the evening, and the same cans arrived the next morning with about the same amount of milk in them, to be used in the manufacture of high class creamery butter. And in a great many instances other creameries throughout the once great butter state of Ohio have been compelled to close their doors on account of milk being handled in this way. Almost always patrons who do the least towards bringing good milk to the creamery are the first to object, if they can detect the semblance to the odor they inhale on lifting the cover off the can that has been left sitting all day in the boiling hot sun without being emptied, in the pound or two of that day's make of butter purchased from the creamery.

Last but not least in importance, and that which every farmer should be careful of, is the cow. See to it that her quarters have proper ventilation; see that she receives the purest of food and water. You cannot expect good milk from a cow that drinks out of a mud hole; you cannot expect good milk if you allow your cow to eat musty hay or oats. We are all familiar with the results of the cow eating ragweed, we know what this will do to milk and butter. Again, I have noticed calves kept directly in front of the cows where they would inhale the odor from the calf pen. This impure atmosphere that the cows were inhaling contaminated the milk. The butter made from such milk will not show any bad flavor while new, but after it is a few days old it will not be fit for use.

## SHEEP HUSBANDRY.

By A. E. BEAM, Xenia, O.

[Read at the Farmers' Institute held at Xenia, Greene County, February 16 and 17, 1900.]

My subject concerns that animal of which we have the earliest mention made in Holy Writ where Abel, the son of the first man, Adam, is spoken of as a keeper of sheep; and all through the Scriptures we read frequently of the great care and love shown by those early shepherds for their flocks, which ought to put many to shame in this advanced day of civilization who keep or pretend to keep sheep, while in reality they seem to expect the sheep to keep themselves, very frequently in pastures where there is very little indeed to eat and no water to drink.

Perhaps next to the cow the sheep stands as the most useful animal to man, as its flesh forms one of the most common and nutritious articles of food and its fleece supplies us with warm clothing.

This animal has probably as wide nativity as any other known to man, for it has been found native from the equator almost to the northern and southern limits of the continents both in the old and in the new world. Naturalists tell us of several varieties of the wild sheep, as the Rocky Mountain sheep of our own country, the wild sheep of Siberia, Persia and Austria, and those known as the Musman, inhabiting the islands of Corsica and Sardinia in the Mediterranean Sea, from which most of the European breeds have originated; all of these wild varieties differing somewhat in size and appearance, but all having the common characteristics that mark our domestic sheep.

We now hasten to the more important phases of our subject, viz., that of the present commercial value and care of sheep, the former of which we will consider first, for, as Americans, we always want to know first of all if a thing is going to pay, and if we can be fully convinced that it is, care becomes light and there is nothing that is too much trouble for us to do to further and complete the enterprise. First, we will ask the question, are sheep profitable stock at present? Our answer is emphatically in the affirmative and by a few practical illustrations we will proceed to substantiate it. Suppose we make a small investment of say fifty dollars in good ewes at five dollars per head, for which price we saw some sell at public sale last month, and this you will agree is a fair price, too.

In a small flock we can always count one lamb to the ewe and February or March lambs will be worth four dollars per head by harvest time, calculating on present prices and those of the past few years. This would be forty dollars for the lambs, and we are satisfied that the ewes would shear two dollars per head at the present rates of wool, which would make a total income of sixty dollars in about six months on the fifty-dollar investment, or in other words, nearly doubling the money invested, for the extra ten dollars would almost keep the flock for that period. If you can tell us in what other stock with the same amount of feed we can invest this money to bring it back in that time we will be greatly obliged.

It is surely a mistaken idea that farmers who have but small farms cannot raise sheep profitably, for we have a neighbor who owns a sixty-acre farm who started two years ago with eleven ewes and has realized from his flock in wool and mutton about eighty-two dollars or an amount, I should judge, sufficient to pay the taxes on the farm, and has now a nice flock of twenty-five sheep which he intends to shear this spring and then cull, thus keeping his flock limited to numbers that he can keep easily. At the same time this gentleman always has as much and even more of other stock (and always keeps it well,

too) than many other farmers we know having more land than he. The secret is right here, he has his farm well fenced and every foot of it produces either pasture or grain.

The most profitable flock of sheep in one season of which we have any personal knowledge was a flock of twenty-five ewes belonging to our father and brother some years ago. These raised forty lambs which brought an average price of between seven and eight dollars per head. Of course we are aware that these illustrations are not needed to convince sheep men of the profitability of the business but only those who have not had the experience.

As it is evident that there is great profit in raising sheep we will now consider briefly the care that they require and as this is the winter season we will begin with that. First, we would recommend the stabling of sheep during the winter months at night and stormy days, for sheep, especially the open-wooled variety, are very liable to take cold if exposed to cold rains. Stabling also secures the flock against the ravages of dogs which are more likely to occur during this season of the year, and insures the sheep regular feed and attention which they are not always so certain to get when running out all of the time.

As to the feed, it is hardly necessary for us to mention it, but we consider corn, oats and wheat bran as the best grain, and clover hay as the best roughness; corn fodder is almost as good, but not so convenient to feed, while bright wheat straw will answer very well for stock sheep; this, however, should always be fed in racks and the chaff well shaken out, and sheep should never be allowed to run to the straw rick to eat, for they will eat under and thus damage their fleece very much by the chaff working into it. Only last year we knew of a large clip of wool nearly ruined in this way, simply because the owner was not experienced and did not know how destructive the chaff would be. We are wintering one hundred and fifty head this year on straw as roughness and they are doing very well with from one to two ears of corn per head each day.

There is no other stock more agreeable to stable than the sheep and scarcely any that appreciates shelter more in rough weather, for they are always ready at the door to go in when they have the opportunity. Most stables need bedding down every day, but the sheep's only requires one or two good beddings a week and their stables are always in nice condition. When spring comes and the tender grass begins to start the sheep do not care so much for the shed and grain and are then very little trouble to care for, as they usually do well until the pasture begins to flag and the hated gad flies begin to torment them. To protect the sheep against these pests we would recommend a dark shed during the day time of the months of July, August and often a part of September. This seems to be their natural way of protecting themselves, seeking dark, shady places, and they will readily lie under or in any old house all day until the sun is quite low and the flies no longer trouble them. As the permanent sheds are not always convenient to the pasture we would recommend the construction of light, portable sheds of from 10 x 15 to 10 x 20 feet in dimensions, so that they may be drawn through gates when necessary by a team of horses; these can be strongly constructed of very light material and will last for years, are always handy in winter for hog shelters and may be used in summer for the sheep, thus always keeping the stock out in the field instead of along the fence or under trees. They can be moved from one place to another and thus be made a means of fertilizing the field. Unlike the hog, the sheep is a great lover of change of pasture and a flock sufficiently large to pasture one hundred acres will do much better if this is divided into from two to four fields and the sheep allowed to pasture a field only a week or ten days at a time, than if they are allowed to graze over the entire pasture all the time at their will.

There is no animal more adapted to cleaning up a farm of brush, briars and weeds unless it be the goat and this has such a bad reputation even from the time of the Scriptures to the present age that we could hardly recommend it to farmers who wish to live in peace at home and abroad. There are plenty of farmers today who have acres of underbrush and briars that have never in their recollection paid their own tax, that would, if the brush were cut down, pasture nine months out of the year a flock sufficiently large to pay the tax of the entire farm. If you do not know of these men we certainly do.

Sheep should have at all times plenty of fresh water. It is a cruel and mistaken notion that they will do as well without it as with it. Of course it is true that they can live a long time without drink, but if they have the opportunity they will drink almost every day excepting very damp days. And especially do they need plenty of water during the hot, dry months, and in winter when on dry feed. As winter approaches again, we are quite certain that it would pay every sheep raiser to dip his sheep before starting into winter for by so doing the ticks are all killed and the value of the fleece enhanced, as well as the condition of the sheep improved.

In regard to washing the sheep before shearing, our experience has taught us that it does not pay, besides we think it hardly the place to wash wool on the sheep's back because it is contrary to nature.

As to the breed of sheep we have very little to say, only it is our opinion that for the average farmer who does not keep large numbers and does not make a specialty of raising pure bred sheep, a medium grade or a cross from the Merino into any of the larger and more open-wooled grades will produce the most profitable results, giving a long, fine, heavy fleece and a large carcass for mutton as well. We have handled this grade for a number of years and our yearlings usually shear from ten to fifteen pounds, and three years ago we had a flock of twenty-five ewes with lambs at their sides that turned off an average of ten and one-half pounds of wool per head, which was declared to be the best average of the season, received at the market in this city.

Where very large numbers are kept together we are satisfied that the Merino is the best breed, as it seems to be hardier than the open-wools and not so susceptible to colds and general diseases.

One word about lambs. Where small flocks are kept we believe early lambs to be the most profitable, for they can be marketed early in the season thus keeping the flock down to the required numbers, but where large numbers of ewes are kept we think April and May lambs best for they are less trouble, and the ewes do not require nearly the amount of feed and attention at this season after shearing; then the lambs grow right along without any trouble on the part of the shepherd and all he has to do is to watch them gambol on the sunny slopes and lead them from pasture to pasture.

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## BREEDING, FEEDING AND MARKETING HOGS.

By J. F. BUTT, Antwerp, O.

[Read at the Farmers' Institute held at Antwerp, Paulding County December 18 and 14, 1899.]

The first step toward success or failure in raising hogs for the market, is the selection of the foundation stock. The sow should be deep, long in body, with short, wide head and plenty of bone, should not be bred to farrow under fourteen or fifteen months old, and should be used for breeding purposes as long as she produces well. Extra care should be taken in selecting the male; he should be a *thoroughbred* (no matter what breed the producer fancies, let him

be full-blooded) and should not only be selected by his pedigree but by his individual merits also, and should not be used for breeding purposes before he is eighteen months old; by experience I find the best results are obtained by using a male from two to four years of age. Both the male and the female should be selected from large litters and as a rule should be from early spring farrows. The breeding should be according to circumstances; where the farmer is prepared with good, warm houses to take care of the little ones, sows should be bred to farrow from the first to the middle of March; where he is prepared with only fairly good shelter the farrowing should be about the middle of April, and if there is no shelter at all the little ones should make their appearance from the fifteenth of May to the fifteenth of June. Some might say here that the farmer that has no shelter at all ought not to raise pigs, but the latter condition is noted for the beginner, or the one who is just starting in to make a home, and sometimes it is the best time for pigs in the whole year. Sows should have plenty of range at all times except at farrowing time, when they should be confined in tight pens about three days before and two days after farrowing.

Where there are a number of sows they should be bred at as nearly the same time as possible for three reasons: First, the pigs will be of a more uniform size and there will be less robbing, consequently more pigs can be raised from the same number of mothers; second, where there is a large litter and a small litter of the same age, they can be changed so as to give each litter the same number of pigs, which can be done very nicely by a little extra work. I will give our method, which we have followed for a number of years with good success. Have pens sufficiently tight to hold the little ones, then, supposing you have a litter today with ten pigs and tomorrow or next day a litter of four pigs, select three of the pigs from the litter of ten as near the same size of the four as possible (generally it will be the smallest ones, sometimes it is not), turn the mother of the four out and put in the three pigs you wish her to raise; get them all in the nest together and see that they stay in the same nest, leave the old one shut away from them about two hours, keeping the pigs close together all the time; at the end of two hours turn the mother in and watch her until she lets them nurse; leave her in with them as long as she will lie down, but turn her out as soon as she gets up and begins to inspect her family; this time leave her out about one hour, then turn her in as before, keeping watch of her all the time, turning her out if she shows any signs of being dissatisfied; leave her out another hour and turn her back in and the chances are she will never know how the increase in her family came about. Third, after the pigs are old enough to turn together, which is from two to four weeks old, the labor of caring for ten to fifteen litters is very little more than it would be for one or two litters of different ages.

This advice is not intended for those that are raising pure-bred pigs for breeding purposes only, but is for the farmer who is raising them for their market value as food. Young sows selected for breeding which have been farrowed in March should be bred to farrow in May of the next year and in March of the year following, making them two years old at their second litter, which will allow them to become larger and have more vitality, and make them probably more profitable in the future.

As soon as the sows have been bred give them the run of a good sized lot or field, the larger the better, with plenty of grass or clover and pure water; avoid using ponds of stagnant water, as it is liable to breed disease. In winter give a little grain, some slop made of middlings and occasionally a feed of whole oats; give them dry, warm sleeping quarters with plenty of room. In

summer give them a good pasture field with clover of all kinds and blue grass and they will seldom need any grain at all until farrowing time, after which commence with a small quantity of grain and slops, gradually increasing the amount until they are on full feed; continue with all the grain and slop they will eat up clean at each feeding until the pigs are about six weeks old. At this time the pigs should be eating well and you should prepare a separate lot to feed them in where they can go in and out at will. Gradually begin to diminish the feed for the sows until they are down to grass alone. By this method of feeding healthier pigs can be raised with less cost than when the brood sows are fed all the corn they will eat the year around.

Gradually increase the amount fed to the pigs in the same ratio as the pigs increase in size, with the same feed, viz., corn, bran slop and grasses of every kind, with all the pure water they want at all times. In addition to this I think bran slop mixed with milk the best feed for pigs the farm can produce. In the way of extras they should have salt, charcoal and ashes always in reach that they may have a little every day; this will keep them in good condition and regulate their digestion.

Keep the pores of the skin open and clean of vermin by a liberal use of coal oil applied in the following manner: Crowd the pigs in a close pen, get above them with a common water sprinkler full of oil and sprinkle them as you would a bed of flowers and the result will be about the same, the oil cleansing and refreshing them as the water does the flowers. There will be no danger in using the clear coal oil so far as injuring the pigs or taking the hair off is concerned; it may loosen up some of the old, outside skin, but that is one of the points sought for. The coal oil can be used at any time of the year except in extreme cold weather and it should be applied about once every six weeks. Where the pigs are infested with lice from former neglect they should be thoroughly showered once a week for three weeks, at the end of which time they will be perfectly clean. The size of the feeding pen, no matter what the size or age of the pig may be, should be as large as the feeder can provide, the larger the better. I find the larger the field, and the greater the variety of feed, the larger the amount of gain in proportion to the amount of feed consumed. Give the pig plenty of range, and a variety of feed that he likes, and a dry, warm place to sleep and, if he has any breeding at all, the chances are ten to one that he will make a *hog*.

I find by actual weighing of feed and pigs that the greatest amount of gain can be produced with pigs weighing from sixty to two hundred pounds; after they pass the two hundred-pound mark the gain is less in proportion to the amount of feed consumed. I also find that it takes about as much feed to produce two pounds of gain in winter as it does to produce three pounds in summer.

There is very little to say in regard to the marketing of hogs, although it is the most essential point to the majority of pig raisers. The pig should be in condition to be placed on the market at any time after he reaches the hundred-pound mark and should be fed as much longer as the gain is worth more than the feed consumed and the prospect of the market price is favorable. It is always profitable (barring accidents and disease) to feed hogs rightly managed on an advancing market, and it is generally profitable to the average feeder to feed hogs on a steady market, but it is a sure loss both in feed and labor to feed hogs that are ready for market when the prices are on the decline.

In conclusion I would say, take into consideration, first, the condition of the hog; second, the outlook for the future market price; third, the market value of the feed and the market value of the hogs; then, if you conclude to sell, deliver them in good condition. By all means avoid giving them for their last feed milk or slops of any kind, as that is likely to cause a heavy

shrinkage on the way to the scales and possibly a dead hog or two. Give them a light feed of dry corn and clear water, and handle them carefully to avoid crippling any of them, and the majority of the shippers will appreciate the judgment you have exercised in handling your hogs and will wish to buy of you in the future.

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## AN EXPERIMENT IN FEEDING HOGS FOR PROFIT.

By ELI A. SPAULDING, New England, O.

[Read at the Farmers' Institute held at Amesville, Athens County, January 17 and 18, 1900.]

Feeding hogs for profit, I think, is the object we all have in view, but to look at some people's feed lots where hogs are kept in small pens and the feed thrown in the mud, you would suppose that they kept them to get rid of their corn without regard to profit. We have for some time been interested in feeding hogs and thought we would make a test of buying the feed and pasturing the hogs on grass and clover.

The first of October, 1898, we had five sows and twenty-eight pigs that we began feeding one peach basket of corn at a feed twice a day and let them run on a small field of blue grass pasture. When the pigs were ready to wean, we took the sows out and still fed the pigs the same amount of corn and the skim milk from two cows until the thirty-first of March, 1899, when they weighed one thousand nine hundred and thirty-two pounds. At three and one-fourth cents a pound they were worth sixty-two dollars and seventy-nine cents. They had eaten one hundred and twenty bushels of corn at thirty-two cents a bushel, which cost thirty-eight dollars and forty cents. We weighed them again, April 29, and they weighed two thousand four hundred and thirty pounds, a gain of almost five hundred pounds. On April 5 our corn was all fed out and we commenced buying bran, shorts and cornmeal, mixed in equal bulk and feeding in a slop at the rate of two or three pounds to the head a day, as near as we could tell, and pasturing them on clover. We bought and fed sixteen thousand five hundred and ten pounds of ground feed, most of it at sixteen dollars a ton, at a cost of one hundred and thirty-one dollars and twenty-six cents. We fed one-half acre of sweet corn, fodder and all, then commenced on green field corn and kept account of the amount fed until we fed one hundred and fifty-four bushels, worth at the time about thirty-seven dollars. We sold during the year two hundred and sixty dollars and twenty-four cents worth of fat hogs and eighty-four dollars and forty cents worth of little pigs, and sows and pigs, making in all three hundred and forty-four dollars and sixty-four cents at a cost of two hundred and twelve dollars and fourteen cents, leaving a profit of one hundred and thirty-two dollars and fifty cents, not counting the value of the clover and work of feeding. The hogs were sold at four cents a pound, or butchered and counted at four cents live weight. The twenty-eight head weighed, September 1, five thousand six hundred pounds, making a gain of three thousand one hundred and seventy pounds in four months, or an average gain of almost a pound each per day.

## MAKING AND RETAINING FERTILITY OF THE SOIL.

By C. H. McCORMICK, McCormick, O.

(Read at the Farmers' Institute held at Wilkesville, Vinton County, December 13 and 14, 1899.)

I have no hobby to present, but the subject above named seems to me as of much more importance to us farmers than we generally recognize. We have no moral right to take out and use up what fertility there is left in our soils, and hand them down to our successors deprived of all the essentials necessary to produce fair crops, and if we wish to succeed, ourselves, we must add to their capacity of production. Had our predecessors known more of the requirements necessary to keep up the fertility, many of us would not now be farming lands bereft of nearly all the available elements of the virgin soil.

There are few, if any, farms in southern Ohio where there can be made sufficient barnyard manure to be applied to our cultivated crops that will replace the elements removed by general farming, but we can produce much more than is generally saved, if we realize the necessity of it and use our most thoughtful efforts. Barnyard manure is not only valuable for the fertilizing elements it contains, but the mechanical effect from its use I regard as of great importance. Most of our soils contain many of the requisites in inexhaustible quantities, yet they are not available. Fields that are mown or pastured until the ground is bare of everything that will form humus, and are then plowed for cultivated crops, soon become compact and lifeless, the fertile elements that the soil contains become unavailable. Anything, be it weeds, dry straw or cornstalks, plowed under, have a marked effect in aerating and giving warmth to the soil and, when rotted, making humus, which gives life and vitality and unlocks the natural elements already in the soil.

If we use all our waste product as above enumerated, together with all the manure we can make by using straw liberally as bedding for our stock, and apply this, we can get a growth of clover, and by turning this under we can make our old land produce paying crops. We have found in the use of commercial fertilizers that we receive much greater benefits on land that contained considerable humus.

The purchase of commercial fertilizers is attended with much ignorance by many farmers. I have used them for twenty years and I do not think I have ever invested so much money in any other one thing with as little knowledge as in the purchase of fertilizers. I have used various brands, with different analyses, costing from twelve to thirty-five dollars per ton. For the last few years I have only purchased phosphoric acid as furnished in the phosphate rock chemically treated, and the question has been to buy the greatest amount obtainable in a ton at least cost. I do not care to pay freight on and handle a ton of material to get two hundred pounds available phosphoric acid, if I can get the same amount in half that quantity.

It matters not how much manure we use to the acre, we find it profitable to use the phosphoric acid in seeding to wheat, as it stiffens the straw and gives better weight in the threshed grain, and we get usually a better stand of grass.

I believe it absolutely necessary to have considerable humus in the soil to get a good stand and growth of clover, and it is seed thrown away to sow clover on thin, compact soil; so we must use some manure to make available on much of our land one of the cheapest and best fertilizers, clover.

It is our custom to clean up all our surplus straw in the early spring and plow under for corn, and we have had marked results from this. Not always in the corn, but invariably in wheat, which always follows corn. I have used



rye and am still using it in a limited way as a crop to plow under and have found it of value, but not to the same extent as clover. I have turned it under while green, but prefer to let it mature, "hog it down," then plow and reseed. Two crops treated in this manner have greatly improved the soil and given an excellent growth of clover. On good soil, a crop of rye turned under green, before it heads out, will give a very large amount of vegetable matter in the soil and seems to have a chemical as well as a mechanical effect in giving life to otherwise compact soil. The roots of rye are no small part of it. One will be astonished at the amount of vegetable matter in the roots of a good crop of rye and the depth to which they will penetrate. It will take some time for these to become available as a fertilizer, but in their decay all these little channels will help to aerate the soil.

Underdrainage is another important element in making available much of our lands that are now unproductive. There is scarcely a farm where it will not pay large dividends to tile all the wet, marshy places, and on many farms there are cold, flat lands (usually termed crawfish land) on which the first and only thing needed is to get rid of the water, and in many cases the lands become wonderfully productive. There is plenty of fertility, but in an unavailable form.

Nature distributes with a lavish hand much that is needed to replenish the soil with the needed elements to produce paying crops, if it is guided by and used with intelligent hands, but if we remove all that nature furnishes and make no returns, the end is sure and speedy.

A few years ago, wishing to do a neat job in seeding to wheat a piece of potato ground, after the crop was removed and the ground thoroughly harrowed, we took one sulky rake and dragged into piles all the weeds and potato tops, and hauled them on to land to be plowed for corn the following spring. They were scattered thinly over the ground and beside these we hauled manure in the early spring.

During the whole season we could readily see just where the truck was put by the better growth of corn, and we could not tell any difference in favor of the manured part where we used twenty loads per acre. I attribute much of the value received from the use of the potato tops and the mechanical action on the soil by having the tops there during the winter. Since then I have no such trash to burn. We now remove all such matter from our truck patches and garden as soon as our truck is gathered and regard this as so much fertilizing material, at the same time removing what would otherwise be an eye-sore through the winter. We do not fear the weed seed when carted to our cultivated fields, as most of the kinds that invade our truck patches are easily gotten rid of by proper and timely preparation of our corn land and prompt cultivation of the crop. We recognize that proper tillage is of much importance in keeping out weeds that hinder growth and is a great help in retaining moisture, yet we must furnish food for our growing crops, if nature has been robbed by former productions. We sometimes are led to complain of severe drouths because of the loss in our crops, but this is one of nature's best gifts sometimes. When evaporation from the surface for a considerable period exceeds the rainfall, the surplus moisture which is taken up by the air is brought to the surface by capillary attraction from the subsoil below. It comes up loaded with the soluble minerals contained in the subsoil, fertilizing the surface and adding to future harvests. So, if we cultivate to prevent this moisture from evaporating we get the immediate benefit of a portion at least, but in the event of our failing in this we will see the benefit of the excessive drouth in future crops.

In conclusion, we should make, save and apply to our cultivated land all the material we can that in any way will add fertility to our soils.

## COST OF PRODUCTION.

By A. SHIRER, Dayton, O.

Can the farmer estimate the cost of a bushel of wheat, corn or potatoes, the same as the manufacturer calculates the actual cost of producing a reaper, mower or plow? If he can it is prudent that he should. It may not be absolutely necessary for his own existence, but if he can ascertain the cost of production he knows which of his crops are profitable.

There are several other reasons, however, of vital importance why the farmer should know the cost of production: First, the income tax. No one knows how soon we will have an income tax that will stand the test of the supreme court; no income tax will be just unless based upon the net income. The decision of the supreme court in regard to telephone boxes certainly suggests to every thinking mind the necessity of knowing the cost of production. If the earning capacity is the basis for taxation, as the supreme court says, then the query certainly arises in every farmer's mind whether it is the gross or net earning capacity; for instance, Mr. A. may have one hundred acres of land and engage in general farming; the crops sold amount to five hundred dollars per year. Mr. B. in the same county has five acres; he practices intensive market gardening and his gross income is annually two thousand dollars. Would it be just to tax Mr. B. four times as much as Mr. A., who has twenty times as many acres of the same natural fertility? B. would be taxed four hundred dollars per acre and A only five dollars per acre. It is certainly very plain that if the earning capacity is the basis of taxation it should be the net earning capacity. As the time approaches for the reappraisement of property, every township, if possible, should know what an average crop costs in an ordinary season. Then the real estate appraiser could make proper return. The state board of equalization would have then more than simply the gross receipts to make comparison from.

No doubt the opinion of the consumers has a tendency to regulate the price. If they read, and perchance in an agricultural paper, that the total cost to produce a bushel of corn is six cents, wheat forty cents, potatoes ten cents, grapes ten cents and strawberries three cents per quart, they certainly conclude that the farmer is continually getting too much for his produce and perhaps some of them will positively refuse to buy.

How does the manufacturer of reapers and plows proceed? He knows the value of his shop and machinery; also he estimates the wear of his tools; he knows the tax and insurance; he charges himself with a whole year's salary whether the shop runs six, nine or twelve months per year; if his children work in the shop they are considered as earning as much as strangers.

Before any implement can be manufactured the proprietor must procure raw material—wood, iron, steel, paint, etc. He knows the cost of manual labor required to produce a reaper or plow; he knows the cost of the raw material per reaper or plow; he also says every reaper or plow must pay his share of the taxes, interest, insurance, etc. Should not the farmer proceed in the same manner to figure up profit and loss? His farm is his shop; he, too, must have raw material—nitrogen, phosphoric acid and potash; it is very evident that he should include the raw material in the cost of production, but he generally ignores this expensive item. Why do the farmers of Ohio annually spend about \$1,500,000 for commercial fertilizer? Why are there thousands of acres of clover raised? Why so eager to save and apply home-made manure? All this is done to furnish raw material for our agricultural plants. The value of the nitrogen, phosphoric acid and potash a crop removes from the soil should be

included when estimating cost of production. There is no doubt if farmers would calculate cost of production on the same principle as the manufacturer we would no more hear of six-cent corn, forty-cent wheat, ten-cent potatoes and three-cent strawberries. The farmer is the only manufacturer that ignores the cost of the raw material. What did we buy when we bought our ground? Did we buy sufficient fertility to raise one thousand crops, or simply a shop in which to manufacture raw material for our agricultural plants?

## HARVESTING THE CORN CROP.

### PART I.

By HARRY MILLS, New Paris, O.

[Read at the Farmers' Institute held at New Paris, Preble County, December 11 and 12, 1899.]

How and when to harvest the corn crop interests each corn grower. There are two general methods by which the work may be done; one where the whole plant is saved for feed, and the other where the corn is gathered and the rest left in the field. Which of these methods is the better and cheaper depends on the time and method by which the work is done.

Whichever way the work is to be done, do it as soon as it is ready, but not before. Especially is this so where the fodder is to be saved. Let the corn get ripe before it is cut. The riper the corn, so that it does not break too badly in handling, the better, for if it is cut too green the fodder and corn will both be damaged. Fully one-half of the husks should be brown before the corn is cut. Then be sure that it is well shocked. Too often corn is poorly shocked; just leaned up, not shocked at all. Where a shock gets down the fodder, and quite frequently the corn, is a total loss for feed. The next thing to do is to get the crop under cover as soon as the fodder will do to bulk; but be sure there is no sap in the stalk, or moisture on the fodder, for if there is it will spoil. In order to tell which method is the cheaper we will have to see what is the cost of handling the crop by both methods; then compare and see which is the cheaper, considering the feed value.

As the work begins first where the fodder is to be saved, we will consider that method first. Within the last few years there has been quite a change in the methods of handling fodder. Machinery is coming more and more into general use; so then we will consider the cost of handling the crop with and without machinery. In making my estimates I count corn at fifty bushels to the acre and fodder sixty pounds to the bushel of corn (which is the estimate on the amount of fodder given by the Ohio Experiment Station) or one and one-half tons to the acre. The cost of cutting corn by hand is one dollar and sixty cents an acre, counting thirty-two shocks to the acre at five cents a shock, which was customary this year. The cost of cutting corn with a binder is one dollar and twenty cents an acre. I will explain how I get the one dollar and twenty cents. Three men with a team and binder will cut from eight to ten acres a day. Three men at one dollar and seventy-five cents a day and the team at one dollar and fifty cents, makes an expense of six dollars and seventy-five cents a day for the labor, or a cost of seventy-five cents an acre, counting nine acres a day's work. Then twenty cents an acre for the twine (a pound of twine will tie about twenty-five bushels of corn) and twenty-five cents an acre for wear on the machinery and interest on the investment (which is one hundred and twenty-five dollars) makes a cost of one dollar and twenty cents an acre for cutting.

There is another consideration that I will mention here; where wheat is to be sown in the corn ground the labor saved, and the improved condition in which the wheat can be sown, by cutting the corn, is worth fully one-half the expense of cutting.

In considering the cost of husking corn I count the labor at one dollar and board at fifty cents or one dollar and fifty cents for the labor, and do not count the teams at all, as the cost of them is very nearly the same by either method. The cost of husking fodder by hand is five cents a bushel. Then it is worth two cents a bushel to crib the corn and bulk the fodder; making a total expense of seven cents a bushel or three dollars and fifty cents an acre. The cost of husking corn with a custom machine is four cents for husking and three and one-half cents for labor, board and fuel, making a total expense of seven and one-half cents a bushel or three dollars and seventy-five cents an acre.

I have a machine designed for home use, which is cheaper and a great deal more satisfactory. It is a Rosentholt Cyclone Husker (most factories make a machine of this kind) and an eight-horse gasoline engine. The husker cost one hundred and fifty dollars, and the engine and belting three hundred and fifty dollars; making a total cost of five hundred dollars. As we have other use for the engine I consider that I have three hundred and fifty dollars invested in the husker and will base my calculations on that amount. Five men, two to haul the fodder, two to run the machine and crib the corn, and one to help in the field and work in the mow after it gets up, will crib two hundred and fifty bushels a day at a cost of seven dollars and fifty cents for labor, plus one dollar for gasoline and lubricating oil; making an expense of eight dollars and fifty cents a day or three and two-fifths cents a bushel. Then the wear on the machinery and interest on the investment is worth two cents a bushel; making a total expense of five and two-fifths cents a bushel or two dollars and seventy cents an acre. The cost of husking corn from the stalk is three cents a bushel, or one dollar and fifty cents an acre.

Then the costs by the different methods are: five dollars and ten cents an acre for saving the corn and fodder by hand; four dollars and ninety-five cents where a binder and custom machine is used, or three dollars and ninety cents where all the machinery is owned, and one dollar and fifty cents an acre for gathering the corn alone. As the corn is the same by either method the fodder costs three dollars and sixty cents, three dollars and forty-five cents or two dollars and forty cents an acre, according to the different methods used in handling. Then take a ton and a half to the acre, the cost by the different methods is two dollars and forty cents, two dollars and thirty cents or one dollar and sixty cents a ton.

In order to estimate the feed value of fodder I will give the comparative feed and manure values of timothy, clover, and fodder (as given by the Ohio Experiment Station) with timothy as the base at a market value of eight dollars and forty-three cents a ton:

Feed value of timothy.....	\$8 43 a ton.
Feed value of clover.....	10 00 a ton.
Feed value of fodder.....	6 17 a ton.
Manure value of timothy.....	5 09 a ton.
Manure value of clover.....	8 46 a ton.
Manure value of fodder.....	4 60 a ton.

These estimates were made on cut fodder. There is quite a difference in the feed value of whole fodder and cut or shredded fodder. Different authorities give it from a fourth to a third difference. Then there is quite a saving in mow room and it is a great deal more satisfactory to handle in every way.

Taking into consideration the feed value of fodder, it is surely as cheap a feed as we can get at one dollar and sixty cents a ton or two dollars and thirty cents either. Of course the stock pasture is worth something, but not much; for quite frequently the ground is damaged a great deal more in one day, by having the stock on the field when it is wet and muddy, than all the pasture is worth. Where wheat is sown the improved condition under which it is sown and the ground not being tramped, more than compensates for the pasture.

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PART II. DISCUSSION.

By HON. R. E. MORROW, Campbellstown, O.

According to the October crop report of the State Board of Agriculture, forty-one per cent. or nearly one-half of the corn crop of Preble county this year has been cut up for fodder. To us in this part of the country these figures seem incredibly high, and while they may be true for the whole county they are undoubtedly far above the percentage of the crop used for that purpose in Jackson and Jefferson townships. In Jackson township the proportion cut up for fodder is but little, if any, over five per cent. The other ninety-five per cent. is harvested in much the same way practiced by the Indian squaw before the advent of the white man, except that the farmer hauls the ears out of the field in a wagon and she carried them out in a basket on her head.

Practically our farmers say it does not pay to cut up corn for fodder and very often the opinion to that effect is expressed in so many words. In view of this opinion it will be worth our while to inquire into the relative cost of the different methods of harvesting the corn crop in order to determine, if possible, the cost of saving the fodder and also to answer the question whether it pays.

To gather the corn off of an acre of ground may be considered a good day's work for the average corn-husker, and two working together with one wagon and team between them will gather two acres a day, at a cost of three dollars and seventy-five cents or one dollar and eighty-eight cents per acre. The stalks are left in the field of course, and may or may not be worth more than the damage done to the ground in pasturing them off. In an ordinary winter the two items will probably about balance.

On our farm we have been able for several years to get our corn crop put into shocks twelve hills square at a cost of one dollar and eighteen cents per acre. The work is usually well done and the shocks stand up and keep well until we are ready to husk them out. We can get the shocks husked out and tied into bundles at a cost of about two dollars and ten cents per acre; hauling in the fodder will cost sixty-three cents per acre, and hauling in the corn will cost ninety-four cents per acre, making a total cost of four dollars and eighty-five cents per acre. Subtracting the cost of gathering the corn off the stalk in the ordinary way and we have left two dollars and ninety-seven cents per acre as the cost of saving the fodder. Estimating the fodder from average corn at one and one-fourth tons per acre, as per Ohio Experiment Station figures, given by Mr. Mills, the cost per ton is two dollars and thirty-eight cents.

One of our Jackson township farmers harvested thirty acres of corn with machinery this fall, cutting it with a corn harvester and shredding the fodder with a shredder which husked the corn at the same time. I will give his figures for the cost as he gave them to me:

"Cutting the corn with a harvester and setting it up in shocks cost one dollar and twenty cents per acre. The thirty acres made thirteen hundred bushels of

corn, being just about an average of the township for this year. At four cents per bushel, the usual charge for shredding, the use of the machine would be fifty-two dollars. It required three days to do the work, and three teams and a man with each wagon to haul the fodder from the field, making a cost for this item of twenty-two dollars and fifty cents. It took one team and hand and two wagons to crib the corn, at a cost of seven dollars and fifty cents. Four hands were employed to put the fodder on the wagons in the field and to mow the shredded fodder in the barn, at a cost of eighteen dollars, making a total cost for shredding and husking the thirty acres of one hundred dollars or three dollars and thirty-three cents per acre. Add one dollar and twenty cents for cutting with harvester, gives four dollars and fifty-three cents per acre as the cost of harvesting this crop by machinery. Deducting one dollar and eighty-eight cents as before, leaves two dollars and sixty-five cents as the cost of the fodder from an acre of corn, shredded and in the barn. Estimating at one and one-fourth tons per acre, gives a cost per ton of two dollars and twelve cents."

The experiments and analyses of the Agricultural Department at Washington show that good corn fodder is equal in feeding value to good timothy hay. There is usually some waste in feeding corn fodder, because stock cannot be induced to eat all of it, but even if this waste should amount to one-half, which is certainly an extremely liberal estimate, still what would be consumed would cost only four dollars and twenty-four cents per ton, which would be a very low price indeed for good timothy hay. As a matter of fact we can seldom buy it for less than double that amount.

In view of the facts and figures given above it would seem that the question, "Does it pay to save corn fodder?", might be answered very decidedly in the affirmative.

## TOBACCO AND ITS CULTURE.

By P. H. SURFACE, Waynesville, O.

[Read at the Farmers' Institute held at Waynesville, Warren County, January 22 and 23, 1900.]

I wish to say in this paper that I have given my ideas on raising and caring for a crop of tobacco as they have really come under my observation during the twenty-three years of experience I have had in the raising and caring for the crop.

The first thing I will call your attention to, is the seed bed and its preparation, and I wish to say right here that this is the foundation upon which depends your success as a tobacco grower, for a man without a good big bed of plants, and plenty of them, is like a train of cars without an engine—there is no go. Therefore, the greatest care and best judgment should be exercised in selecting a suitable spot, where you are sure you will not fail to grow an abundance of plants. For this purpose I have selected a convenient place on the south side of a building, and enriched it year after year, until now I am sure of plenty of plants, not only for myself, but for my neighbors as well, and the surplus plants are readily disposed of at prices that justify my care and attention.

After the beds have been located they should become a permanent thing, always keeping down all weeds and grass—never allowing any weed seed to mature on the bed. After all the plants have been removed from the bed necessary for the crop to be grown, the bed should be thoroughly covered with a coat of the best fertilizer obtainable. This I usually get from the horse stable or pig pen, after which I spade up thoroughly and sow in turnips. I find them not only good for winter use, but a great advantage in keeping down all weeds and grass.

With me there is no fixed time to sow my seed, but it is usually done as early in the spring as the ground will allow working. This is done by spading my bed as shallow as possible, and, if I find the ground in good condition, I sometimes use the hoe, chopping and pulverizing the soil. I find that by not spading deep my bed will hold moisture longer, and this, of course, will enable the seed to sprout more rapidly. If I can catch a day any time from the middle to the latter part of March that promises to be a day of sunshine, and the ground is in condition, I begin my task early in the morning, spading my beds up, and allowing them to remain so until after dinner. This will allow the sun to dry the top, and greatly aid me in getting my seed bed in excellent condition. The process of thoroughly pulverizing the ground is then done by the use of the hand-roller and garden-rake. After this is done I make a calculation of the amount of seed it will take to sow the amount of ground that I have prepared. After this I take a suitable amount of common wood ashes, sifted through an old-fashioned flour-sieve; to this I add the seed and thoroughly mix, using the sieve to sow the seed and ashes lightly and evenly over the bed, the ashes acting as a preventive against insects that may appear later on. After all is done, and the seed is sown, the covering of the bed with canvas is the next important thing. This is done by placing boards along the side or edge of the beds to nail the canvas to. For convenience, I have made my beds six feet wide, running a wire through the middle. This should be elevated a little above the outer edges, so as to give the covering the shape of a house or barn roof, giving the sun more power upon the plants. The canvas or covering should be of the thinnest muslin. I use cheese cloth in preference to anything else, it being so thin that the bed can be sprinkled without removing the cover.

Last year, after my plants had grown to a good size, I discovered that spots in the bed were dying, and, upon examination, I found a very small worm in the masses about one-fourth of an inch long and not larger around than a hair. In appearance it resembled the common fish-worm. How to get rid of it was a problem not yet solved, and, as it was a new-comer, I was at a loss to know just what remedy to apply. The remedies I had used in other years to destroy the fleas that had attacked my plants, I now found, failed to destroy my new, unwelcome visitors. After trying various remedies, and all to no purpose, the idea occurred to me one day that to take some tobacco leaves I had saved from my crop the year before, commonly called "trash," and placing a quantity in an old coffee sack, and thoroughly soaking in a barrel of water until a strong solution was made, and, by the use of the sprinkling can, applying it liberally to the bed, would save my plants. This I did, and to my surprise it not only eradicated my beds of the worms, but acted as a fertilizer also, giving the plants a deep green color, indicative of strong, vigorous plants.

Preparation for transplanting will be another important feature. The plowing of the ground should be done before the plowing of corn ground is begun. Early plowing, in my observation, is far the best, as this will allow the ground to settle, and by so doing it will hold the moisture far better. I usually plow my ground, and then follow with the roller. If the spring is wet, and heavy rains beat or pack the ground too hard, a disc or spring-toothed harrow can be used to loosen up the top, using care not to work the ground too deep.

After the plants have attained sufficient size I remove them from the bed, in order to give those that have not grown so rapidly a chance, always picking the largest and as nearly uniform plants as possible, and in so doing get a nice, even growth of tobacco, ready to top and ready to cut at the same time. The old style of transplanting by hand is now a thing of the past, like the sickle and the scythe. Great improvements have been made, and instead of the old and tedious way of planting, by stooping over and transplanting by hand, we

now sit down and ride. At the same time, the process of transplanting by machinery far excels the old way, and I give, as my opinion, that the best and most reliable transplanter on the market today is the Beamis. It is the most simple, and at the same time most reliable, of all transplanters.

After the plant has been transplanted from three to five days the process of cultivation should begin. By so doing we get the start of all weeds and grass, thus lessening the cost of labor, and, instead of the one horse and little cultivator, we now use two horses and the riding plow, doing almost two men's work over the old way. Unless the season is very unfavorable, from three to four plowings and once going through with the hoe, and cutting the few weeds that have escaped, will shove our crop beyond the danger point, so far as weeds are concerned.

As the plant grows and develops, the time comes when our attention is directed to the task of topping or budding. In this there is a vast difference of opinion, some holding to one rule, and others to another. The cry has been, and still is, that the tobacco grown is too large, and buyers continually condemn our crops on account of its size. I, myself, have tried different experiments, and the rule I have settled upon as the right and only one is to plant the tobacco three feet one way and from eighteen to twenty inches the other, tending the crop one way only, and, as the top or bud begins to appear, top high. To make a long story short, plant close and top high! This will give the amount of pounds per acre, and at the same time will give a small leaf.

After the topping is done the growth of the tobacco in height is checked. Then the tobacco begins to spread, and at the same time begins to thicken up. However, another enemy appears at this period—that is, the suckers. In from ten to fifteen days after topping we will find all along the stalk, and just above the leaf, what are commonly called suckers, and my way of dealing with them is to allow them to grow until those in the top become about four inches long; and those are the ones that make the rapid growth. Then I go through the field and take out the four top suckers, leaving all the rest. In about two weeks more I make my final suckering, preparatory to cutting. After I take out the suckers the last time, if the season has been favorable and my crop has done as expected, I then let it remain standing a few days.

With the season for cutting, we come to another important period. Care must be taken not to cut the crop too green; at the same time, overripe tobacco is very objectionable. I wish to say right here that the two leading varieties in the market today are Little Dutch and Zimmer Spanish. If my crop should be Zimmer Spanish, I usually cut in from three to four weeks after topping. If Little Dutch, I let it remain at least five weeks before removing to the barn. In cutting the crop, my plan is to throw three rows one way, and three the other, always throwing the end cut off so as to point toward me. In this way there is room to drive a wagon between, and two men, one on each side, with stick and spud will, in a very short time, have a load ready for hanging in the shed. Care should be taken not to hang it too close, and to see that all leaves are shaken loose and straightened, as these are two reasons why we have shed-burr and pole-rot, but not all of the reasons.

One of the important points to be determined is, what kind of a barn or curing shed is most desirable? Different kinds of buildings have been constructed, some broad and flat, others narrow and tall, some with wooden shutters, others with glass windows. Those in favor of glass windows thought that to cure tobacco light in color much light was necessary, but this has proved to be a failure, as light tobacco is grown, and not made in the curing shed. Again, those with the tall, narrow barn thought that to cure tobacco quickly was the proper thing, and this barn was constructed in such a way as to make it as hot as possible, in order



to cure the tobacco quickly; the result was shed-burn, bad color and dead tobacco. The man with the broad, flat barn wants slow curing. This proved nearest to the proper style. However, the idea of building a barn for slow curing can be carried too far, the result being that the tobacco molds, because of insufficient heat and ventilation.

After the crop has been properly housed, and the curing process is over, even though the stalk may be green, if the leaf is sufficiently dried the work of stripping should not be delayed, as the early stripped tobacco is more pliable, and the gum usually found on the leaf has not dried away, thus making a better quality of goods. This brings us to another important stage—that is, how to strip, size and grade the crop. After the crop has been stripped and properly tied up in hands, in order to lessen the labor, I kneel it away in boxes, taking care to keep the middle well filled. The hands should be laid in from the end or head of the box. After filling the box it is taken to the rick and emptied. When the time comes for re-boxing, the box or case can be slipped over the bulk again, and in this way a great deal of labor can be saved. The final process of boxing should take place from the middle to the last of February, choosing a warm time to do the work.

The average number of pounds upon an acre depends greatly upon the kind of land and the season. I generally expect not less than one thousand pounds. In the year 1898 I had planted in Little Dutch eight and one-half acres, which yielded me nine thousand and seventy-six pounds, an average of one thousand and sixty-seven pounds per acre. This I sold at eleven cents per pound, giving me in return one thousand and fifty-three dollars and thirty-six cents. The year previous to this my crop of twelve acres made an average of one thousand three hundred and fifty pounds, and was sold at ten cents per pound. I have just finished stripping an eight-acre piece, by actual measurement, and I find that, after footing up the weights, I have eleven thousand and thirty-one pounds. This is also sold at ten cents per pound, and will make an average of one hundred and twenty-seven dollars and eighty-eight cents per acre.

The best kind of soil is usually found upon our hill lands, as the tobacco grown upon this soil becomes more firm, with a better body, while that grown upon our lowlands is light and chaffy, and, therefore, will not stand the process of sweating.

All neatness and cleanliness, both in our sheds and stripping-rooms, should be closely adhered to, keeping all litter and dirt swept up, at the same time placing the sticks in proper shape, putting on the appearance of a model farmer. Even though a man may have an inferior crop, by proper handling and observing these rules the buyer at once, upon entering his barn, will form the opinion that care and pains have been taken, and, while a neighbor who does not follow these rules will be sitting at home, wondering why a tobacco buyer does not come, he will be hauling his crop to market.

The year just closed has been a most prosperous one for the packers, manufacturers and farmers. Indeed, they will have to search long and diligently through musty records in order to find a balance sheet that will compare favorably with that of 1899. Zimmer Spanish is rapidly being torn from the innocent grower's grasp, at prices ranging from ten to ten and a half cents per pound, and if they continue buying during the next month in the same proportion they have been during the past two, a crop of 1899 Zimmer Spanish still in the possession of a farmer will be a curiosity worth going miles to see.

I have said that the two leading varieties are the Zimmer Spanish and the Little Dutch, and at this day they are. But another variety bids fair to become noted—that is the Ohio Havana. Every school-boy, and every one connected in any way with the tobacco industry, knows that the highest priced, and at the

same time finest flavored, tobacco is grown upon the rich and fertile soil of the far-off isle of Cuba. Mr. Wolf, of Dayton, Ohio, has this to say in "The Tobacco Leaf," a journal published in the interest of tobacco growers. He says: "Ohio Havana is the only American-grown leaf that is a really honest substitute for the best imported leaf. It is grown in the famous Miami Valley, from the best Vuelta seed, and the Miami Valley soil is different from any other United States soil, just as the Vuelta district soil is different from any other Cuban soil. Much Cuban-grown tobacco is greatly inferior to that grown in the Miami Valley."

A few days ago, a gentleman who had been traveling over the island of Cuba in the interest of the Beamis transplanter was giving a history of his work and the great tobacco garden spot of the world. He remarked during his conversation that he had been talking with some of the leading tobacco growers there, and they had informed him that there was but one place in the world that tobacco could be grown that could compete with the Cuban-grown tobacco. "That place," he said, "is in the valley between the two Miami rivers." Is it any wonder that our roads are traveled every day with home-seekers striving to get a few acres whereupon they can raise the tobacco that will command the highest price? I for one believe it right and honorable to follow the occupation that gives in return the most for my labor, if the occupation be an honorable one. When a man falls into the river, and swims with the current, he will pretty surely reach the landing, while he who tries to swim against the current will probably drown. Those who fall in with time's changes, and go with the current of human affairs, will succeed, while those who obstinately cling to wornout theories, and try to swim against the current, will go down in the eddy. There are some fashionable as well as sensible fads now in vogue that farmers would do well to observe and heed. The demand is not as great now, as it once was, for wheat, pork, corn and beef, but the man who has in his barn a fine lot of the despised tobacco need not have any fears, for it has become as staple as wheat, and will demand the ready cash.

I know there are some here today who would oppose the raising of tobacco, but the time has come when it must be classed among the money-making industries of this, our beautiful country. We should raise our hands and bow our heads in thankfulness that our lot is cast among the people of Ohio and in the county of Warren, and between the two Miami rivers. Well may our hearts swell with gratitude as we stand today and look upon our fine farms and fertile valley, and know that it is our privilege to live in this, our glorious country, the land of the free and the home of the brave.

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### TOBACCO AS I KNOW IT.

By OSCAR O. ZEHRING, Germantown, O.

[Read at the Farmers' Institute held at Brookville, Montgomery County, January 22 and 23, 1900.]

The tobacco crop of the United States is every year increasing in importance. It is one of the great money crops of the country and its area of production is constantly spreading wherever suitable soils are found, from Massachusetts to California and from Wisconsin to the Gulf states. The importance of the subject to the farmer may be estimated when it is considered that next to the cereals used as staple articles of food, there is probably no plant so widely and generally grown as tobacco, and certainly none that is used by a greater number of the human race, civilized or uncivilized.

Although tobacco growing is one of the most profitable branches of agricul-

ture, the subject has been neglected by writers of agricultural literature and the few scientific facts pertaining to the cultivation, as far as they have been discovered, are scattered through many books and agricultural publications, and few of these publications are accessible to the ordinary farmer. Some service may be done to the farmer generally, and especially in this section, by stating important facts that are accurately and certainly known, and the experience of intelligent and scientific men on the subject of tobacco.

The Atlantic Monthly says: "The average consumption of tobacco for the whole human race of one thousand millions has been reasonably set at seventy ounces per head, which gives a total produce and consumption of two million tons, or four billion four hundred and eighty million pounds; at eight hundred pounds an acre this would require five and a half million acres of rich land to be kept constantly under tobacco cultivation."

Tobacco is a native of this country, whether we are proud of that fact or not. Tradition in the United States, as given us by the Indian, is that it was given him by a Supreme Being as a reward for his kindness shown toward the Spirit. Since its discovery by the white man tobacco has gradually increased in value as well as production and acreage, almost every state in the Union growing it to a certain extent. The great bulk, however, is grown east of the Mississippi river, while Montgomery and Darke counties can duplicate the number of pounds grown west of that river.

In the year 1860 the United States furnished one twentieth of the entire production of the world. The production of the United States in 1870 amounted in round numbers to two hundred and fifty million five hundred thousand pounds, with an acreage of three hundred and thirty thousand five hundred. In 1895 the production of tobacco was almost doubled, nearly five hundred million pounds being produced with a value of thirty-five million five hundred thousand dollars, while the same year twenty-five million seven hundred and fifty thousand dollars' worth was exported, compared with only fourteen million seven hundred and fifty thousand dollars imported.

The agricultural report for 1896 ranks the states as follows: Kentucky first, with a production of one hundred and forty-three million five hundred thousand pounds; North Carolina second, then Virginia, Tennessee, Ohio, Pennsylvania and Connecticut. Ohio, as will be seen, ranked fifth in the Union with an output of twenty-three million six hundred and eighty-eight thousand eight hundred and eighty pounds. Montgomery county, which has the most valuable and productive soil in the state, produces more than one-fourth of the above amount, the yield being over seven million pounds. Next in rank to Montgomery are Darke and Preble counties. Of the eighty-eight counties of Ohio, sixty-six grow tobacco, the lowest number of pounds raised in one county being fourteen.

The belt of the country in which the best tobacco is grown in the United States lies between the thirty-sixth and fortieth parallels of latitude. Each state, according to the properties of the soil, produces a different class of tobacco, namely, chewing, smoking and that for cigar making. To illustrate, Connecticut and Wisconsin produce a cigar wrapper; Florida, parts of Ohio and Pennsylvania produce a cigar filler; Kentucky and Missouri grow the finest chewing tobacco, while Virginia and North Carolina produce the best smoking tobacco. This is all due to soil and climate. The wrapper soil of the Connecticut valley is a light, sandy soil, similar in texture to the Atlantic truck soils. The soil of Ohio and Pennsylvania adapted for a filler grade is a strong limestone clay. These two types of soil differ materially, the wrapper soil con-

taining on an average about five per cent. of clay and maintaining throughout the season seven per cent. of moisture, while the filler soil has about twenty-five to forty per cent. of clay and maintains an average of about twenty per cent. of moisture.

Tobacco thrives best in a good, rich soil, rich in vegetable mould, but light, containing a good amount of organic matter and well drained; this kind of land will produce excellent smoking tobacco and on such soil the finest leaves are grown. The more clay in the soil the thicker the leaves become and the aroma becomes less, consequently the plant is not so well suited for the finer qualities of smoking tobacco, although the weight yield may be heavier. This is true in this section.

In Montgomery county four varieties are grown, seed leaf, Dutch, Spanish and Havana. In the year 1848, the first variety, Gephart seed, was grown on the banks of Hole creek, near Centerville, by Thomas Pomeroy, who was a native of Suffield, Connecticut. This variety was the only kind grown until 1870 when Hon. John A. McMahon, of Dayton, sent the Stansils some Yara seed, which, owing to the properties of the soil and the condition of the climate of Miami valley, developed into a variety known as Little Dutch and has been quite extensively grown.

Our Zimmer Spanish is a variety of Havana. About the year 1876 a Wisconsin grower secured seeds from Havana and, after meeting with success in growing it, he sent some seed to Jacob Zimmer of Miamisburg, Ohio, who distributed it among the growers. At present Zimmer Spanish has a larger acreage than any other variety in the Miami valley. Havana commands the highest prices of any known variety, consequently growers here and everywhere have made many attempts to introduce and cultivate it. Although it is a hardy plant and will grow under varied conditions, yet to yield a profitable crop it must be grown in a climate as nearly as possible like that to which it is accustomed. It is a native of a warm climate and thrives best in a moist atmosphere. At Germantown, Ohio, we have grown it for two years. Several growers report favorably upon its success, while others have not succeeded. Some growers have raised one thousand pounds per acre, while as low a yield as two hundred and sixty pounds per acre has been reported by others. Many growers think it to be the future crop of Montgomery county if it succeeds in raising a fine grade of filler.

The manufacturer using the filler makes the Cuban tobacco the standard. The size of the leaf should be from twelve inches to fourteen inches, not longer, and it should not be very dark and heavy; as many seem to think, but of medium body and of a rich brown color, burning smoothly and freely. For this fine tobacco our farmers receive only thirteen cents per pound.

All manufacturers agree that it is never well to make a cigar from one kind of tobacco, that is, a cigar should not be made in which the entire filler is Ohio or Pennsylvania tobacco, but tobacco should be taken from various sections and combinations tried until one is found that blends well; when this result is secured the combination is adopted and a new brand of cigar is put on the market. Now, if we can grow Havana that will compare favorably with the imported Havana tobacco, many of the manufacturers would gladly reduce the amount imported from Cuba, that is, if they could be assured of being supplied at home. Indeed we have no choice in the matter, the trade demands it and we must supply the demand. Statistics show that we are improving in this respect. The value of imported tobacco in 1896 amounted in round numbers to sixteen and one-half million pounds, in 1897 to nine million seven hundred and fifty thousand pounds, and in 1898 to seven and one-half million pounds.

The tobacco of Montgomery county goes toward supplying the manufacturers

of our country, but unfortunately our goods find their way into medium and low-priced cigars and the higher priced and best cigars are imported. There are several reasons why smokers like the Havana tobacco. It has been proven that Havana has from two to four per cent. less nicotine than our tobacco, and the aroma is finer. It does not flake and ashes do not fall off while burning, which is very disagreeable. I am satisfied that Havana tobacco can be grown in this locality, with proper care and cultivation, sufficient in quantity and quality to raise the standard of our tobacco to a higher grade in the market. Why not turn our attention to this matter? This is an age of competition, sharp and keen, and he who offers the best product, the most carefully cultivated and harvested, is the one who wins.

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### TOBACCO AS A PROFITABLE CROP.

By S. B. FRESHOUR, Covington, O.

[Read at the Farmers' Institute held at Covington, Miami County, January 26 and 27, 1900.]

It is a well known and acknowledged fact among tobacco dealers that both the soil and the climate of our immediate vicinity are highly favorable to certain varieties of tobacco in the production of heavy crops of the very best grade.

This, then, taken into consideration with the prices paid for tobacco within the past few years, offers a suggestion for one solution of the problem of balancing the columns of the farmer's income and expenses. True, this is the time of wonderful prosperity; the prices of almost all manufactured products have advanced and everybody who wants to be is busy, but the prices of corn and wheat have not advanced in proportion and the farmer is compelled to give from 50 to 150 per cent. more of his produce for the commodities he is obliged to have than he did in the days of "hard times" and depression. Hence, the average small farmer must depend largely upon a side crop for his pittance of independence. I should not, however, advise any one who is inexperienced in the raising and caring for tobacco to forsake the growing of corn, wheat, etc., but to try only a small plot of ground at first as an experiment. A crop of tobacco to be profitable must be the very best that the soil can be made to yield; then cared for and marketed in the best possible condition.

There is a field for almost endless theorizing in tobacco culture, but the successful grower knows better than he can be told with what promptness and precision he must give his most careful attention to the minutest details of the work from seed time until his crop is marketed. The ground must be in just the right condition to receive the plants when they are the proper size to set—and this must be attended to at once—the cultivation, worming, topping, cutting and putting into the shed, all must be done promptly and without error to gain profitable results.

Let us first consider the plants: A seed bed, to be about the proper size, should contain about one hundred square feet to each acre to be planted; preferably situated on the south side of a fence or building. It should be well covered with manure during the winter, and late in February, should the weather be mild, the coarse part of this winter dressing should be raked off and the ground spaded when dry enough. After this it should be thoroughly raked about once a week until the time for sowing which, if the seed be sown dry, should be about the first of April; but if it be sprouted—which is preferable—the sowing may be deferred about ten days. When ready to sow give the bed

a final and thorough raking so that the ground will be quite level and fine; sow evenly a tablespoonful of seed to one hundred square feet of surface, press in well with a hand roller, sprinkle well, and cover with canvas. If the bed is kept moist and free from weeds the plants will be large enough for setting by the first of June.

As to the field, it has frequently been said that the soil which will produce a good crop of corn will also yield a crop of tobacco; this in the main is true, but a clay sub-soil must be well tilled to invariably mature a crop of tobacco properly, for should the soil become water-logged, but for a few days only, the crop is ruined. A very good field is a well manured clover sod, plowed down early in the spring and cultivated once a week with either roller, drag, spike or spring-tooth harrow, as the condition of the ground may require, until the time for planting. If the weather is hot and dry, the plants should be set late in the afternoon, just after the ground has been given a thorough and final dragging. As soon as the plants cease to wilt through the heat of the day the ground should be carefully gone over with the cultivator—set with narrow shovels—going as close as possible to the plants without moving them; this should be repeated about once a week as long as the plants are small enough to admit the team without damaging the leaves. After the second plowing the shovels should be set to run shallow.

Every interested farmer wishes he knew of a quick and easy way to exterminate the tobacco worm, but as yet has found no remedy to prevent the ravages of this voracious pest as effectual as that of hunting it out and killing it. This is a guest who comes early and stays late, never sleeps, is always hungry, and will work to his own interest with tireless persistence.

The topping should be done when the plant is about ready to bloom, and, if possible, all the plants should be treated so that when it is ready to cut it can be harvested clean. Dutch tobacco should stand about twenty-five days before it is taken in. One important feature of a good crop of tobacco is to have the leaves of uniform size. To obtain this, the suckers should be carefully broken off as soon as they have fairly started to grow.

It is in the housing of tobacco that many have lost a great portion of their crop, by overcrowding and not properly ventilating. The stalks should be placed a good, generous handbreadth apart on the sticks, and after having been well shaken apart should be hung so as to allow about twenty sticks to a twelve-foot rail. With these precautions, and good ventilation while curing, there is little danger of shed-burn or pole-rot.

The stripping, bulking, etc., is a part of the work that requires as much or more care than anything else. A straight, even bulk, the hands of uniform size, the leaves in each hand of uniform length, every hand well tied and neatly tucked in—all this, taken as a whole, wins the dealer's favor, and next to the quality, the handling of tobacco makes or mars the crop.

The experienced grower undoubtedly finds tobacco a profitable crop in this locality. It is profitable because if the farmer does not plant more than he is sure he can care for properly, he is almost certain to average \$60 an acre from it, and often more than that. Then again, I never knew of a tobacco field to be sown in wheat but that a bountiful crop was the result. Moreover, the raising of tobacco engenders the habit of clean farming and thorough cultivation of other crops. Unlike other side crops, such as potatoes, fruits, vegetables, etc., tobacco is not a perishable commodity and it is not necessary that it should be sold as soon as raised; it may be kept over without any fear of its deteriorating in quality, but with certainty that it will be improved by the next year.

Let us ask ourselves the question, Is our tobacco marketed to the best

advantage? If not, it is not as profitable as it should be. We should have a better and more uniform method of raising, caring for, and marketing our crops and should be able to fortify ourselves against prices that really do us a great injustice because perhaps some one, through need or inexperience, has sold a crop at a lower figure than this tobacco belt justifies, and thus, to a greater or less extent, set the price for the whole neighborhood. There is a way by which we might protect ourselves, and it is believed by many to be quite practicable; it is a Tobacco Growers' Association, properly officered, with stated meetings, at which all that pertains to the culture, marketing, and everything that is to the growers' interest is freely and thoroughly discussed. Besides this, an association representing five hundred or one thousand acres of uniform, first-class tobacco would have a fair chance of selling directly to the manufacturer, thereby saving to the farmer the margin of the dealer.

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### THE ORCHARD.

By. D. J. CUTLER, West Canaan, O.

[Read at the Farmers' Institute held at West Jefferson, Madison County, February 2 and 3, 1900.]

It ought to be unnecessary to argue the importance of the orchard at this time, but when we note the number of farms that have so few trees that they furnish only a very limited supply of fruit, or that have no orchard, or a neglected one, it would appear that its value is not well understood. It must be admitted that some persons are so situated that it would seem imperative for them to direct every effort that their labor will produce immediate returns, which would account for some cases of neglect.

The planting and care of an orchard is a good investment. It will furnish an important part of the food supply of the family, will help very materially in maintaining health and some years will bring more money to the acre than any other part of the farm.

The location of the orchard should be near the house, especially if designed principally to raise fruit for home use; first, for convenience in gathering the fruit when wanted; second, because there is less danger of some one else gathering the fruit without your consent; for there are fruit pilferers in Ohio as well as in other places, and I presume they always will be unreasonably numerous till public sentiment places the one who steals fruit on the same level with one who steals any other kind of property.

High land, other things being equal, is better than low places, there being less danger of damage from frosts. The soil should be fertile enough to produce good crops of grain or grass. If for other reasons a place is selected where the soil is poor, it should be manured before the trees are set. If the land is wet, it should be drained by open ditches or with tile; much will depend on the character of the surface and the soil whether open ditches will do or whether tile should be used. There are places where plowing two or three times in lands the width of the spaces between the rows and setting the trees on the ridges thus formed will furnish all the drainage necessary. If the soil is good and not too wet, deep plowing and cultivating is all the preparation needed before setting the trees.

My early recollection of peaches is most delightful. Large, rosy, luscious peaches lying thick upon the ground, all one could eat at any time and to their satisfaction. Then, there was no canning done; the fruit was used fresh from the

tree or dried for future use. There was no market for them that I remember, and all that were not used by the family, or given to some less fortunate neighbor, rotted on the ground. This plentiful supply did not exist in every season, for then, as now, we sometimes had severe cold weather that would kill the fruit buds and occasionally the trees.

In the year 1871, I planted about two hundred peach trees. They were seedlings from the best peaches that I could get. The peach will produce the same from seed with but slight variation, but to be certain of exactly the same, the trees should be budded. The trees when set were one year old and were pruned to a switch, leaving only the upright stem. They grew well, were cultivated carefully, pruned regularly and cut back after the most approved fashion of the day. I succeeded in producing a fine peach orchard and had hope of reaping financial reward for my labor, moderated somewhat by my knowledge of the uncertainties of peach growing in this locality. I worked and waited for fruit. I got about three bushels of peaches from the orchard when a severe winter killed the trees, except a few that had been set in fence corners and were surrounded with grass. This may be an extreme case with cultivated peach trees, but since then I have set few peach trees, pruned moderately, always let the grass grow under them and have been tolerably successful in raising a home supply of peaches.

Among my early experiences with apples was one that was not calculated to impress the mind in such a manner as to afterward awaken pleasant memories. It was not only when I was young, but when the apples were young and they had something of a doubling-up effect on me.

To start an apple orchard, buy your trees from some nursery that has a reputation for being reliable and you may get what you buy, or you may have the same kind of experience that I had when I bought King and got Rhode Island Greening, York Imperial and got Paradise Winter Sweet, Roxbury Russet and got Tallman's Sweet, Early Harvest and got Monstrous Pippin, some of them good apples, but not what I wanted; or you may raise trees from seeds and graft them with scions cut from bearing trees that you know are what you want. The latter method would require more time and perhaps be more expensive, depending somewhat on your circumstances and your knowledge and skill in nursery work. Perhaps in most cases it would be better to buy the trees and take the risk of getting them true to name. If planting for market have few varieties; if for home use, more kinds. Strive to have varieties that will ripen in succession from the earliest to the longest keeper. There are so many good varieties and my experience is limited to so few that I will not attempt to give a list of varieties for an orchard, but will name a few that I think are good apples and have done fairly well for me. They are Summer Rose, Early Harvest and Benoni for summer; Maiden's Blush, Autumn Strawberry and Ohio Nonpareil for fall, and Rambo, Grimes Golden, Northern Spy, Paradise Sweet and Smith's Cider for winter. When selecting varieties always consider quality, general productiveness and degree of success in your locality.

Set the trees thirty-six feet apart each way. For a few years after setting they will not need that much room, but they will grow large enough to crowd each other if set closer, and this distance will make it convenient to drive through the orchard with a team. Measure the ground carefully and drive a stake where each tree is to stand, making straight rows both ways. To set the trees where the stakes stand, take a board six inches wide and about eight feet long, cut a notch in one side in the middle of the board and just wide and deep enough to admit the stem of the tree to the center, then bore two holes in the ends at equal distances from the notch. Place the board on the ground with the stake in the notch, put two pins in the holes at the ends; remove the board leaving the pins;



dig the hole for the tree, replace the board and set the tree in the notch. There will be no need of looking along the rows one way and then the other to see if the tree is in the right place, for if it is properly held in place while planting it will stand exactly where the stake stood.

Handle the trees so there will be as little drying of the roots as possible from the time they are taken from the nursery to the planting in the orchard. Cut off all bruised parts of the roots with a sharp knife; a smooth cut will heal better than a bruise. Trim the top to correspond to the loss of roots from transplanting. Do not shovel in the soil around the tree and tramp it down, leaving the roots all in a bunch in the center, but spread out the roots in a natural position, fill in loose soil, a little at a time, working it around and under the roots with the fingers, leaving no cavities. After the roots are well covered finish filling the hole by shoveling in and packing the earth well around the tree. If set in the fall make a small mound of earth about a foot high around the tree to brace it against the wind and as a protection against mice. Level down the mound in the spring. In spring planting do the work as early as the ground will work well. If the trees are well set and cultivated they will seldom need watering. Cultivate the orchard for four or five years when it may be seeded to grass and pastured with some kind of stock that will not injure the trees.

The best time to prune an orchard is in the spring before the leaves come out. Some say whenever your knife is sharp. That will do if your knife is always sharp and is used so often that there is but little to do at any time. When the work is done in the spring there will be some sprouts that should be cut out in the summer. When the trees are small be careful not to leave too many branches and not cut too much at one time. Have in mind the form or shape that the tree should grow and prune to produce that shape. The best shape is a central stem with branches at different distances from the ground. Different varieties require different treatment. If they are of a spreading or drooping character cut on the under and outsides and when cutting back cut near a bud that will start upward; if of upright growth thin the inside and when cutting back cut near a bud that will start outward. Do not allow a tree to fork if you can avoid it, for if it is not braced it will split down and ruin the tree; if a tree is forked, however, take two small limbs, one from each side, and twist them together, leaving the ends projecting outside of the tree; if these limbs are thrifty and not shaded too much, they will usually grow together, making a strong brace that will prevent splitting. To prevent forks cut back one shoot far enough to check the growth, but not far enough to cause the stub to die, and in a year or two the other shoot will be enough larger than the stub so that the stub may be removed with less damage to the tree than would result from cutting close at first. This cutting back may be done in any part of the tree where there are two limbs of nearly equal size, one of which should be cut out. Avoid as much as possible cutting branches more than one inch in diameter. When larger branches are cut the wound should be well painted or covered with grafting wax.

Now, let me say in conclusion, raise apples; plant enough trees to have a liberal supply; especially have some of the long-keeping varieties, for

"With apples that will keep till the time comes for greens,  
We'll live through the winter with less pork and beans."

## STRAWBERRIES.

By J. S. JOLLY, Hebbardsville, O.

[Read at the Farmers' Institute held at Albany, Athens County, January 3 and 4, 1900.]

Small fruits do not receive the attention on the farm that their importance merits, as their cultivation is thought too small a business for the busy farmer to spend time upon, but really no well regulated garden is well regulated or complete without strawberries, raspberries and blackberries. These fruits are cultivated for the farmer's own table more than they used to be, and this is well. What article of food can be more healthful than a succession of these fruits, beginning with the earliest strawberries, after a long winter with canned fruit or no fruit at all.

On a majority of farms there is as yet no attention paid to this branch of horticulture with the idea, I suppose, that these berries cost more to raise than they are worth. This is a mistake for a plat of good ground will yield in small fruits an equivalent to anything else grown in the garden. And then there is the pleasure in raising them, and the still greater pleasure in eating them after they are raised by our own hands.

There is no mystery about the cultivation of the strawberry, as some suppose, only a few simple rules to be kept in mind. I think a safe rule in selecting soil is to take any ground that will produce a good crop of corn or potatoes. This means, of course, that the soil must be rich, but it will not do to select a spot where water stands in winter or early spring. The ground should be plowed deep and harrowed till it is very fine and loose, as this will greatly aid in setting the plants and they will be more certain to live and thrive, otherwise there will be a poor stand and some bare spots, which involves quite a loss.

My experience has been that in April as soon as the ground is dry enough to work nicely is the best time to set plants, but I have had moderately good success from setting as late as the last of April. Spring setting is much better than fall setting for any one but the specialist. The worst obstacle in the way of getting a good stand of plants I have found to be the white grub. I dread him worse than dry weather, and I know of no way to combat him unless it is to stop killing the skunk. The plants should be set on level ground—that is, the ground should not be ridged as for sweet potatoes. I have seen strawberry plants set on ridges, but they will dry out and then, too, it is unnecessary. If the plants are not set out as soon as dug, care must be taken to keep them moist, never letting the sun or wind dry out the roots. When setting on a large scale the following is a good way. First, stretch a line where the row is to be and fasten it to stakes. It requires two men to do the setting, one with an ordinary dirt shovel which he thrusts down about three inches into the mellow earth just by the line, and with the next motion moves the dirt towards himself about two inches; then the other man puts the plant into this space with the roots well spread and, when the shovel is lifted up, presses the fine soil quickly and firmly around the crown of the plant. Right here is danger; the plant must not be set too deep, thus covering up all the crown, but deep enough so the crown will not dry up when the hot weather comes.

Success in growing any crop on the farm depends on doing everything at the right time, and raising strawberries is no exception to the rule.

The most of the cultivation can be done by horse power if the rows are set three and a half or four feet apart. The weeds must not be allowed to get a start. It is not very difficult to keep them down, especially on a small plantation, by going over the rows often with horse and cultivator, using the hoe only

close to the plants where the cultivator cannot go. In this way there is not much hand work necessary the first year, unless ground is selected that is naturally weedy; even then by going over the ground often the weeds will not get beyond their infancy. It will be a great satisfaction in cultivating with a horse to have the rows long.

It is very necessary to have enough plants of a fertilizing sort to ensure good pollination. Of late I have practiced setting every third row with a pollenizing sort, which is none too thick, especially when it is very rainy during the blooming period. Much rain, then, will wash a great deal of the pollen into the ground causing many one-sided berries and nubbins.

It is a good plan when the weather is rainy and runners start freely to cut them off as fast as they appear until about the 1st of July, after which let them run, taking care to train them along the row until there is a matted row about two feet wide. Runners should be kept cut off with a hoe after this so they can not run across the rows. The object in keeping the runners cut off at first is to get a strong root growth in the parent plant before it spends its strength in forming weak plants.

Straw is the best material to mulch with and it will pay for the extra trouble it takes to put it on. A mulch serves two purposes. It keeps the berries clean, and the plants will not lift out of the ground so badly by the alternate freezing and thawing. The mulch should be put on when the ground freezes in December, but if put on heavy a part of it must be removed in the spring or the plants may smother. Leave on just enough straw to cover the old leaves out of sight and the new leaves will easily get through.

After a patch has borne a crop of berries it is then an old patch, and what to do with it is quite a problem. Whether it is best to set out a new patch every year or clean up the old one and so let it bear two or three crops is the question. I have tried the latter method, but cannot say that it is the best. I think that growers generally incline to the plan of setting out a new patch every year. To clean up an old patch I take the old-fashioned shovel plow with bull-tongues attached instead of the wide shovels, drive the horse along on the edge of the matted row, tearing up plants, root and branch, come back on the other edge of the same row, taking care to leave a narrow strip of plants undisturbed in the center of the row, say about five or six inches wide. I go over all the rows in this way. Then I take the broad hoe and do some hand work, leveling down the surface, as the plow will leave it quite rough. The strip of plants left undisturbed in the center of each row is to renew the patch by their throwing out new runners, and by fall I have seen the ground well matted with nice plants that produced a fine crop the next year. In this way I get a new patch without setting one out. This work should be done as soon as the berries are all ripe and gone, but it will be a great help to take a scythe and mow all the leaves off close to the ground a day or two before using the plow, so as to let the leaves wilt out of the way.

In selecting varieties it is best to get those that are well tried and can be relied on to do well on almost any soil, and unless you have plenty of time to spend in experimenting with new sorts, let the other fellow do the experimenting. For an ordinary sized family four hundred or five hundred plants, or even less, will make a good start, and on good soil and with good care will astonish the grower with the amount of berries produced; but while you are planting why not put out a thousand or more plants and raise several bushels of berries more than you want at home and sell them to your neighbors who do not raise any. Give the boys charge of this work and they will have something to do that will interest them and will at the same time furnish them profitable employment.

## FRUIT CANNING.

By MRS. EMMA CHURCH FINNEY, Millersburg, O.

[Read at the Farmers' Institute held at Killbuck, Holmes County, January 5 and 6, 1900.]

The scientific aspect of housekeeping is attracting a great deal of attention just at the present time. The problems of the chemistry of food, of securing the most nourishment for the least money, the correct methods of sanitation, the best and most conclusive way of dealing with the allpervading microbe, and many more, so that the housekeeper is having impressed upon her mind in many ways the importance to life and health of careful housekeeping: she is learning that it is as much an affair of worthy brain work as it is of hard manual labor. The present method of fruit canning probably originated with a Frenchman, but it was first put into successful operation in this country. The beginning of the process dates from 1825 when President Monroe signed patents to Thomas Kensett and Ezra Daggett to protect them in an improved method of preserving fruit. Kensett appears to have canned various products as early as 1819. At the present time the United States far outstrips all other countries in the variety and abundance of its canned goods: over twenty thousand factories in North America employ a million of hands directly and indirectly in the canning business during its season.

Kensett thought that cooking the fruit and sealing it to exclude all the air was all that was required; if it spoiled the air had not been entirely excluded. In about the year 1848 he and a German professor, whose name I do not now recall, decided to test the matter. They thoroughly sterilized a can of fruit, sealed it in the usual way, except that in the lid they inserted a rubber tube; this tube they left open, but kept the air in it sterilized by keeping it heated to the required temperature to kill all the germs, and this fruit kept. This was an important discovery in the science of fruit canning and led to the conclusion that the fruit must be cooked a sufficient length of time to kill all microbes, that some kinds require a longer time for sterilizing than others and that sealing is to keep out bacteria instead of air. You have noticed, perhaps, when a can of fruit is off flavor that some will have a mouldy taste, some will be very acid like vinegar, some very soft, and so on; just which of the different germs cause these different flavors has not been demonstrated, but we will, perhaps, not remain long in doubt as there are several scientists working along this line, Professor Selby of our own experiment station among them. Just at present we read and hear so much about bacilli, bacteria and microbes that I fear we are in danger of forgetting old-fashioned dirt, that cleanliness is very necessary, indeed that it is next to godliness in fruit canning as well as in other things.

In canning fruit the greatest care should be taken and time must not be considered. All fruits may be canned with or without sugar, as the sugar has no part whatever in the keeping. We sweeten all of our fruit when we can it for we find that if we try to sweeten it when we open it we cannot sweeten anything but the juice unless we recook it; the fruit will still be sour. Some think strawberries are better if canned without sugar; we have tried that and when we opened the cans we drained off the juice, reheated and sweetened it and poured it over the berries; they being very soft it quickly permeated them, but it was more trouble and in our opinion the berries were not so good. We use only the best granulated sugar in canning fruit. Other sugars are not so clear, not so pleasant to the taste, not so pure and are more likely to ferment. We choose only perfectly sound and fresh fruit. It is false economy to purchase fruits on the very verge of decay, even at a low price, as they quickly ferment

after canning, and not only the sugar and work but the jars as well are lost. We are not particular what kind of jars we use but consider the Mason self-sealer the most convenient; we use no tin cans. We test our cans before using by filling them with warm water, putting on the rubbers, fitting the lids and inverting them for an hour; if no water escapes they are fit for use. Where we have enough fruit to can at any one time we prefer to cook it in the cans in a boiler. To do this we place some folded hay or straw in the bottom of the wash boiler, stand the jars on top of this and pour around them enough cold water to two-thirds cover the jars, put a close cover on the boiler and place over a moderate fire; as soon as the water around the jars boils enough to thoroughly cook the fruit we take out one jar at a time (if the fruit has settled we take the fruit out of one of the jars and fill up the rest) and seal just as quickly as possible. When filling the cans with berries we use a wide-mouthed funnel to fit the can; we then put in a layer of berries, then sugar, then another layer of berries, and so on until the cans are full and we have a cup full of sugar in each can, then we fill the cans about two-thirds full of cold water and place in the boiler.

Apples are more difficult to keep than any other fruit. The early harvest apple is the best one we know of for canning. We use the juice and grated rind of one lemon, a quart of water and two cups of sugar for two cans of apples.

Many do not succeed with tomatoes in glass; we scald, peel and pack them in cans, place them in the boiler and cook an hour and a half, that is, we cook them that long after the water in the boiler reaches the boiling point, as it takes longer for sterilizing them than many other things. If we want them to remain whole for slicing we select small, smooth round tomatoes and do not peel them.

Grapes we pick from the stems, pack in cans and pour boiling water over them, let stand a moment, pour off, and repeat this three times. We have ready a boiling syrup made of a pint of water and a cup full of sugar to each can. We pour this syrup over them, taking care that the cans are filled to overflowing with juice; heat the lids and seal as quickly as possible. The jar we have here was canned in this way. They are the Lindley variety, a beautiful red grape, and there is scarcely a pulp broken.

A gentleman told me not long ago that in traveling over the country he very seldom came across canned peaches that were not off flavor in some way. I think that must have been at hotels or boarding houses, for all people in the country have good canned fruit, just as they all make good butter, and they know they do. We have met with success by proceeding as follows: We pare the peaches, remove the stones, and throw them into cold water to prevent discoloring. We then put a pint of water and a cup full of sugar in a preserving kettle, stir until it boils, drain the peaches, put them in the syrup, bring quickly to a boil, then stand them on the back part of the stove to cook slowly until tender, and lift each piece carefully to place it in the jars. Cooking two or three seeds in with the fruit improves the flavor, and we canned some one year with the peeling on and found them so good that we chose them first very often when getting a can of peaches for use.

To prevent jelly and fruit butter from moulding we use paraffine wax, melting and running it on about one-eighth of an inch thick when the jelly or butter is nearly cold; when ready to use it we run a knife around the edge of the jar, lift off the cake, rinse it off and it can be used many times. We have used brandy also with fairly good results.

Salicylic acid should not be used to preserve fruit; it will preserve the fruit it is true, but it does its work so well that it preserves it after it reaches the stomach, renders it indigestible and makes it very injurious.

We experimented the past season and tried everything we ever heard of that was in reason at all. With some cans we put white sheet wadding on the fruit before putting the lid on, on others we put a layer of writing paper, and did many other things that were foolish, for the fruit was about the same in all cases. One can we sealed when only part full and the next day opened it, very quickly filled it with hot fruit, had ready a hot lid, sealed it, and it kept all right. You have noticed in fruit put up at the canning factories that there is always an abundance of juice and have thought perhaps they were saving of their fruit, but they know what keeps. If the fruit is not covered with juice it will mould on top.

We are requested to tell how we can our strawberries that are on the exhibition table, that have retained their color so perfectly. First, let me say, they are of the Warfield variety, and are a dark red berry. We express the juice from enough berries to half fill a cup, put this in the kettle, add a cup full of sugar, stir well until it boils, put in the berries, let them boil up once, then remove to the back part of the stove where they will scarcely bubble for about twenty minutes, then put them in the can. There is generally enough syrup left over to dissolve the sugar for the next can. When we cook them in the cans, we put in a layer of berries then a sprinkling of sugar, allowing a large cup full of sugar to each can. It takes about two quarts of strawberries for a can.

Summing up briefly, then: Test the cans before using by putting warm water in them and inverting them; choose only fresh fruit, not overripe; thoroughly sterilize or cook it to kill all germs; use only pure sugar; be sure the cans are filled to overflowing and that the juice or syrup covers all the fruit (pass a silver spoon handle around the inside of the jar to break any air bubbles that may be there); seal quickly. The next morning the covers should again be tightened, as the glass contracts after cooling. Put them away in a cool, dry, dark place. If these directions are carefully followed and there is not too large a quantity cooked at one time to prevent careful management of each jar, not one can in one hundred will be lost, and the canning factories with all their advantages for superheating and handling always calculate upon losing a certain percentage of their fruit.

### POULTRY ON THE FARM.

By MRS. RINE ELY BROWN, Bantam, O.

[Read at the Farmers' Institute held at Amelia, Clermont County, January 3 and 4, 1900.]

You have all heard the saying, Take care of the cents, and the dollars will take care of themselves. This is excellent advice, but in poultry raising it ought to read, "Look out for the sense, and the dollars will look out for themselves," for in no kind of work is good common sense of more value than in poultry culture. Let us look at some of the reasons for making poultry culture a prominent department on our farm. First in importance is the small amount of capital necessary to invest and the generous returns for the amount invested. The safest, surest, and only practical method of learning how to raise poultry, is by careful attention to a few hens at first, then gradually increasing your flock. Next, quick returns. Eggs are always cash, they are ready for the market as soon as laid and the sooner they reach the market the better. Another point in favor of this industry is that you are constantly enriching your farm and at the same time deriving a profit from your business. The fowls aid you in the fight against weeds by eating the seed and in the destruction of many insects.

Dairying and poultry culture go hand in hand and are the main industries with which a farmer's wife can supply her purse. You may prefer dairying, but we have had the best success with poultry.

We first tried a mixed flock, but did not like them. For a general purpose fowl we have found the Barred Plymouth Rock a success. They are hardy, easily raised, good layers if properly cared for, good sitters and mothers, and for a breed that is so large are wonderfully active and industrious, quick and sprightly in their movements. First among the good qualities of a fowl is size and this the Plymouth Rocks have in an unusual degree, hens frequently weighing eight pounds and roosters twelve pounds. Never keep them after they are two years old; they are then more liable to disease. We know if we find a bird dead under the roost it is an old hen. The two-year-old hens should be sold in the spring as soon as eggs become cheap; they sell better at that time than at any other.

Do not inbreed. Sell off all your own roosters and buy pure-blood stock. We do this each year and find the chicks are healthier, therefore easier to raise.

Remember that farm raised chickens that have the free range of the farm produce eggs that hatch stronger chicks than eggs from penned stock. We know this from our own experience, for we tried placing some of our best hens in a pen with two thorough-bred roosters which we had obtained from a prize-winning flock. We gave them careful attention and a mixed feed, but the chicks were weaker than those from fowls that had the free range of the farm.

One of the chief values of pure-bred fowls for the general market is found in their uniformity. We sell our chickens by the pound and know that it pays to attract the eye of the buyer by taking pains in our shipments, selecting those of same age and size, as near alike in all respects as possible. A commission merchant told me, and I will tell you, that one scrub chicken in a coop will affect the price of the whole dozen and often the lot will sell for more money, if the scrub is removed. Since shipping the Barred Plymouth Rocks we have always received the top of the market quotations and frequently from one-half cent to two cents per pound above that. For highest price in the fall one should ship the week of the Jewish New Year. They brought twelve cents per pound this year at that time.

Chicks hatched the last of March and from then until the last of May do the best; when hatched earlier than this they bring higher prices, but you must have a suitable shed or house with plenty of sunlight, and they require greater care. We had chicks hatched the second week in March that brought thirty cents per pound when eight weeks old, and they weighed just one pound each at that age. A most important thing to remember to get steady growth is to feed often, at least five times per day. The first food should be bread moistened in water or milk, milk is best; put plenty of pepper on it. Feed this for two days or longer if you can afford to do so. On no account feed cornmeal dough; cook it. The chicks do well on corn-bread and clabber-cheese. Boiled rice is an excellent feed for very young chicks. You can get a damaged or low grade article cheap, and as it increases so in bulk in the cooking it is not expensive. Cracked corn is all right after the first week, but they do best on a mixed feed. Give plenty of fresh water and milk. Provide gravel and cracklings or meat scraps if possible.

To guard against lice, grease your young chicks when first taken from the nest with fresh lard on the head and the throat. Grease the mother on the breast and under the wings. Repeat this once a week and watch them grow. Keep in mind that it is the winter eggs that pay the profit. Give your hens a sunny shed, where they can scratch, and to keep them scratching throw their

feed of grain in several inches of chaff, or dry leaves. Provide boxes of dust; the hens not only enjoy it, but dust is a necessity and a luxury to them, just as a morning bath is to civilized man. Put coal-oil on the roosts, for poultry and lice cannot live and thrive together. Save all your refuse vegetables, potato or apple parings, scraps from the table, in fact anything a hen will eat; boil them, add milk, a handful of cracklings, a red pepper, a few chopped onions, and thicken this mixture with meal, bran or chop feed; mash all together and make a firm, crumbly mass. Feed this hot mixture at least once a day and for the morning meal, then listen to your birds talk, sing, and cackle. Give them plenty of milk; in very cold weather give them warm milk three or four times during the day. Corn is a good feed for the evening meal. Your laying as well as your young stock need a constant supply of fresh water and gravel. Save all your sorghum seed and raise at least a small patch of millet; these give variety in the list of good, cheap foods. Gather the eggs in often. Children like this work. We may be more fortunate in this respect than you, for the Brownies help us; three little Brownies and their grandfather have been wonderful helps in the raising of poultry on our farm.

The attacks of rats, cats, hawks and even an old hog may give you the blues; they did us, but set traps, catch the rats, get your good man to shoot the cats and hawks and coax him to sell the hog that is a chicken eater and try it again.

I would advise you by all means to have a poultry yard, some place in which you can keep your mothers and their young broods from the layers. It pays in the amount of feed saved, to say nothing of the annoyance of having all the fowls on the place running over and frequently killing your young chicks. We have our entire yard covered with gravel and divided by a wire partition keeping the small and larger chicks separate. By all means have a quantity of good, substantial coops for summer use, they will last for years: never trust to a harrel turned down or a pen of tobacco sticks. Have them made rat-proof, but not too tight, or you may have a quantity of smothered chicks; part of the front made of wire netting is a good idea. Have the doors made to raise easily and fasten securely at different heights. Have at least two feeding coops made, one for the small and the other for the larger size; they can then be fed with feed suitable to their ages and are sure to get it. Have your coops made of light material and separate, so you can handle them easily. To keep down the lice these coops should be white-washed at least three times during the summer. We have tried placing coops on the ground, but in wet weather it was too damp; a floor made of loose boards was not a success, for they were often misplaced, crushing a chick or injuring their feet; besides, they made good hiding places for rats, and at one time we found thirty-three chicks, murdered and dragged under one of these boards, and all done in less than an hour. We now made a tight floor raised about four inches from the ground by four block legs, little runs lead up to the coops and the chicks soon learn to use them. The floor is cleaned easily. This is done almost every day while the hens are out enjoying their dust baths. The floor is then sprinkled with air-slaked lime.

To succeed, you must be willing to attend to the many little details that need such close attention. If you do not possess a love for the biddies, try to cultivate it. Do not trust to luck, but employ pluck instead, and use plenty of American push.

Do not be afraid you will overstock the market. To show the extent of the business I will give some figures from *Farm-Poultry*, which says: "The dairy products of the United States for one year were valued at two hundred and fifty-four million dollars; the poultry products five hundred and sixty million dollars,



or more than twice as much, and still not enough, for during the same year thirteen million dozens of eggs were imported and the total value of poultry and eggs imported was twenty million dollars." Think of twenty million dollars going to a foreign country. Why that money ought to be in the pockets of the American farmers' wives. Just think of the many things we could buy with even a part of this twenty million dollars and then let us try to get it.

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## HOW WE RAISE POULTRY ON THE FARM AND HOW BIDDY HAS REPAID US.

By GEORGE BUCHAN, New London, O.

[Read at the Farmers' Institute held at Adario, Richland County, January 15 and 16, 1900.]

The word poultry means domestic birds or barnyard fowls; these include chickens, turkeys, ducks, geese, etc. Any of these four kinds of fowls can be raised on the farm at a fair profit if the proper methods are used in caring for them, but the kind in which we are most interested today, and of which I shall write, is fowls proper or chickens. Of these there are three general classes, the very large or Asiatic class, the medium-sized or American class, and the small or Mediterranean class. It is not my intention to say what breed should be kept, but I take it for granted that each one will choose the kind he likes best and the one from which he thinks he will receive the best returns.

In 1892 we moved to the farm on which we now live, but as we had a great deal of cleaning up and repairing to do, we did but little in the poultry business that year; during the time, however, we were reading in different papers of the practical experiences of poultry raisers, as to how poultry houses should be built, arranged and cared for, the number of fowls to be kept, how they should be fed, etc. In 1893 we built our first poultry house, and although it is not a model house, yet it is a very comfortable one. In the fall of 1893 we culled our flock, keeping only forty-five head of what we considered the best. And as we now had a comfortable house for them we furnished it by covering the floor with cut straw and chaff. A dust box was provided, a box containing crushed oyster shells and grit, a jar of nice fresh water and a jar of milk. The fowls were fed warm chop feed, table scraps and meat scraps for breakfast, wheat for dinner and corn at night. We cleaned the house every two weeks, sprayed the perches with kerosene, put slacked lime and land plaster on the platform, etc. The result was that when the mercury was hanging around zero and below it we had eggs to sell at from twenty to twenty-eight cents per dozen, something we had never had before.

In January we had hens wanting to sit, but thought it rather early in the season to raise young chicks. As an experiment we set a few hens in February and as it proved to be a success we had some early broilers to sell at four dollars and a half per dozen. In March we set the hens at fast as they were ready, selling off what we could for broilers as long as we could get twenty-five cents each. Some of the later hatches were kept for capons (this was our first experience with capons); we had thirty-seven head which we sold in January, averaging over eight pounds in weight, at ten cents per pound. We now kept fifty pullets, selling off the balance with the old stock, and, footing up the account for the year 1894, exclusive of poultry and eggs used by the family and for hatching, it amounted to one hundred and sixty-five dollars and sixty-two cents.

This, of course, gave us some encouragement in the poultry business and in 1895 we went to work again and succeeded in raising a nice lot of poultry; but on account of some of our poultry sheds being burned down, we sold everything off early in the season, except fifty pullets and seventy-five capons. The capons were sold later, averaging eight pounds each at twelve cents per pound, our sales this year, 1895, amounting to one hundred and fifty-six dollars and sixty-nine cents.

In 1896 we were building and, of course, did not have time to raise much poultry, but during the summer we remodeled another poultry house we had and in the fall we doubled our stock of layers, keeping now one hundred head. our sales amounting to one hundred and thirteen dollars and twelve cents.

Our banner year for hatching chicks was 1897, and we succeeded in hatching out nine hundred; it was also the banner year for rats, hawks, weasels and opossums and while the hens hatched they snatched them away and succeeded in destroying a large per cent. of them, but with all of our bad luck our sales amounted to one hundred and ninety dollars.

We concluded to rest a little in 1898 and did not try to raise as much poultry as usual, but better luck and better prices made up somewhat for the difference in number. We had this year eighty-five head of capons; forty-one head were shipped on the 19th of December and sold in the Cleveland market for thirteen cents per pound, live weight; another lot of thirty was sold for ten cents per pound at home, and still another small lot was sold in New London, Ohio, for thirteen cents per pound, live weight, our sales this year amounting to one hundred and seventy-five dollars; 1899 still finds us in the poultry business in a small way. We have this year sixty-five head of capons and I think I am safe in saying that our sales will exceed one hundred and seventy-five dollars.

The nest boxes we use are large and roomy. Each one is separate from the other so they can be removed, cleaned, and sprayed with kerosene to prevent lice, as fowls will not do much when infested with these parasites. When hens are sitting each nest is covered with a board, leaving air space. In the morning when feeding time comes the covers are removed and if the sitters do not get off they are lifted off to get food and water and dust themselves; they soon return to their nests, when they are again covered up and remain so until next morning. This prevents other hens from laying in with them or annoying them in any way so as to cause them to break their eggs, and by this method we get good hatches, usually averaging ten each the season through. When hens are set a book account is kept of when and where, so we know exactly when and where to look for chicks. We always try to have three or four hens come off the same day, giving the chicks all to one hen, as this makes much less work in feeding and caring for them.

The coops we use for young chickens are all made out of good-sized store boxes. Coops should have good roofs extending well over the fronts and sides to prevent them from getting wet inside during stormy weather, as dry quarters are essential to the welfare of young chicks. The floor should be covered with cut straw or chaff and the coops should be cleaned twice each week and the floors sprinkled with slacked lime or dry ashes. Something should be put under the coops to keep them from the ground and they should have doors in front that can be shut up tight, with slat doors inside. The best feed we have found for young chicks is dry bread crumbs or bread soaked in milk and squeezed dry. When old enough feed plenty of wheat and you will soon have broilers. Cleanliness is next to godliness and nowhere on the farm, except in our homes, does it give better returns than in the poultry yard.

To put poultry raising on the farm in a brief form, it is necessary that a person should read up, breed up, feed up, hustle up, clean up, and fix up, and that is the way to raise poultry on the farm; then you can figure up, and when

I do the latter I find that the total for six years amounts to nine hundred and seventy-five dollars and forty-three cents, or an average of one hundred and sixty-two dollars and fifty-seven cents each year. Adding twenty dollars each year for poultry and eggs used by the family and for hatching and I have a total of one thousand and ninety-five dollars and forty-three cents, or an average of one hundred and eighty-two dollars and fifty-seven cents each year; that is the way biddy has repaid us.

In conclusion may I ask, are farmers doing all they can do towards making poultry raising on the farm a profitable business? If not, then why not? There comes a demand from old and young, from black and white, from land and from sea for these products of the farm, spring chickens and nice, fresh eggs. No more healthy or palatable food can be added to our list of eatables. Even the doctors prescribe chicken broth and soft boiled eggs.

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### POULTRY RAISING.

By MRS. NELLIE WILSON, Norton, O.

[Read at the Farmers' Institute held at Waldo, Marion County, February 19 and 20, 1900.]

I have not prepared a long and exhaustive article on poultry raising, but wish to give you just a few of my ideas and experiences in the producing and care of early spring chickens. I have no patent chicken-raising machine to describe for I believe that if we begin by buying all the machinery that comes our way we cannot expect any profit. Profit is what we want and to get it there is only one sure way; do a little more labor and buy less of the patent appliances. Many people spend the greater part of their time in the spring trying some new labor-saving device for raising poultry. We must not look at our time and labor but at the reward which awaits us in the end. The path of poultry raising is not as flowery as it is pictured to the eyes of some, but requires a great deal of hard work to make it successful.

People have asked me how I can get hens to sit in winter. As a general rule I save out my best fowls each year and when I get a good class of hens I keep them as long as they live. I generally know where these hens stay most of their time and build some very good nests for them. Then when they commence to lay, I commence petting and talking to them, so that by the time they are ready to sit I can do almost anything with them. I never scare a hen off her nest, but always treat her kindly and she shows me that she appreciates it by doing whatever I wish her to do. When it is time for the little chickens to come out, if the weather is very cold I bring the nest into the house, tucking it well behind the door, under the sideboard, or anywhere so that the hen is comfortable and out of sight, and twelve out of every thirteen will hatch. I always remove the shells to save smothering the little chickens. I do not take them off the nest until they are at least twenty-four hours old, and I try to keep the family of little chickens in a warm place; if compelled to put them out of doors I always put them on the south side of a building so that they can have the warm sun, and I never fail to feed warm food.

If bothered with one of the great chicken pests, lice, I easily get rid of them by using crude carbolic acid, one gill in three gallons of water, put it in a common sprayer and spray the nest, roosts, in fact everything that is connected with the chickens. Twenty-five cents' worth of crude carbolic acid will kill all the lice on a farm for one year. In addition to this I always use lime freely.

Another great and most dreaded pest is the cholera, but chickens never have cholera unless they are infested with lice first. When my chickens show the least symptoms of cholera I destroy the lice first and then treat the cholera, and I think I can cure it every time by taking one-fourth of an ounce of tincture of iron to three gallons of milk and giving it to the whole flock to drink, feeding dry bran also. If I have any severe cases I shut them away from the rest and give ten drops of iron three times a day to each bird for two days, not giving any drink, and they generally come out all right.

I feed as much wheat as possible and sometimes parched corn also in cold weather. Then, I save all the bones from the table and burn them in the stove, always keeping a box at hand, and as they sift down through the ashes pick them out and save them for the chickens. It is surprising how the egg basket will increase in contents. I have now some little chickens two weeks old, and I sold eighty-five dollars' worth of poultry last year, and I would not give five or six old hens for all the incubators I ever saw.

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## THE TURKEY.

By MRS. BENTON CLEMONS, Elenor, O.

[Read at the Farmers' Institute held at Mulberry, Clermont County, February 7 and 8, 1900.]

The turkey, the largest of gallinaceous birds, is a native of North America, where it was found by the early settlers scattered over a vast extent of territory extending from Lower Canada to the isthmus of Darien, but not existing west of the Rocky mountains. It was introduced into Europe at the beginning of the sixteenth century and is now found wherever domestic fowls are reared, with few exceptions.

Our domestic turkey has yet many of the habits that were characteristic of its wild progenitors. In the wild state the males associate together and seek their food during a greater part of the year apart from the females who go about singly with their young. But in winter both sexes congregate together forming large flocks. The disposition to roam about, the manner of seeking their food, etc., are inherited from their ancestors, and centuries of domestication has made no material change in these habits.

Turkeys, on account of their size and the excellence of their flesh and eggs, have become the most valued kind of poultry, and to make the raising of them remunerative it is necessary that you give it a careful study.

It is an undisputed fact that those farmers who are making stock raising a success are those who are dealing with strictly pure breeds. Therefore, in starting a flock of turkeys let us begin with as pure a breed as we can secure. I have had the best results with the bronze and the black turkeys, and any extensive dealer will tell you that these colors are the most desirable. The bronze variety when fully developed, say one year old, is the heaviest, but at the holidays, when our turkeys are usually marketed, it has been my experience that the black turkeys are the largest and fattest, and in conversation with a neighbor who superintended the dressing of fifteen hundred last year, he told me that the blacks presented the most yellow and plump appearance of any breed. A serious mistake is made by many in disposing of their breeding stock every year. A great many dispose of all the old birds and keep for stock a lot of young and immature hens. While it may be true that a young hen will lay more eggs I am convinced by observation that the old hens produce a greater

number of poults with sufficient vitality to carry them to maturity. I have a hen which I have kept for nine years and last year she did as well as any preceding year. Never part with your stock, either hens or gobblers, unless they should prove themselves unworthy.

On our ordinary sized farms we should keep about five hens and one gobbler and when the laying season begins lay down some old barrels partly filled with straw in the shed, orchard or some secluded spot, cover the barrels with some brush or rubbish, and your turkeys will invariably drop their eggs in these improvised nests instead of straying to the fields or woods to lay them. Besides the convenience of quickly gathering your eggs this renders it possible for you to secure them all, for the crow, that freebooter of the forest, at this stage of the proceedings seems determined to enter into a co-partnership with you. As the eggs are dropped, gather them and keep them in a cool, dry place away from the fire, laying them down on the side. About the middle of April, if you have a sufficient number, set one turkey on fifteen eggs and two hens on ten eggs each, and when hatched put all with the turkey. By this manner of hatching you can cause most of your hens to lay another setting and thus secure a larger number of eggs.

Have your coops made of boards five feet long, two feet wide and two feet high, with false bottoms, a door in each end and a partition in the middle made of lath. This makes a room for the little ones to eat and run in and prevents them from being tramped. A hen with this kind of coop will take care of twenty-five or thirty chicks nicely.

The life of a turkey from the time it is hatched until ready for market might be divided into three periods, the tender period, the growing period and the fattening period. Of all kinds of poultry the turkeys when first hatched are the most tender and delicate. It is now that they require your most vigilant care and can you tide them over the tender age, which lasts about four weeks, they become hardy. For the first week feed hard-boiled egg, the second week add bread crumbs soaked in sweet milk and squeezed dry; after this add rolled oats, oat meal and clabber cheese mixed with bread crumbs and seasoned with a little black pepper; later on feed whole wheat and baked corn bread, varying the feed each time if possible after the first week. Never at any time feed any sloppy food. Feed three times daily until the chicks are two months old; after that feed two times, night and morning. Let the drinking vessels be cleaned daily and the turkeys be supplied with pure drinking water into which put a little carbolic acid. The coops should be cleaned daily and clean straw put in each time, and fumigated twice a week by burning sulphur in them with the doors closed.

Besides the feeding and care of coops it is necessary that you take every precaution against vermin which will be sure to attack them during the tender age. When first placed in the coop dust the little ones and the hens with insect powder. The second week mix a little fresh lard with the insect powder, grease the top of the head, throat and wings of each little one and give the hen a pretty thorough greasing; do this once a week until they are eight weeks old.

The coops should always be placed in a poultry yard. My yards are twelve feet square and graveled to keep them dry. For the first week do not let them leave the yard; the second week if the weather is warm let them out when the dew is off for a little run in the garden or orchard, but on the least indication of cold or rain return them to the coops; after they are eight weeks old allow them to roost in their yard, outside of the coops. They are now in the growing period and seek their living mostly in the fields feeding on insects, but it is best to still continue feeding a little morning and evening; it encourages them to come home to roost.

It takes about thirty days for the fattening period. Feed all the shelled corn they will eat; do not give it to them on the cob; they will not pick enough off. Keep a supply of pure water by them, also plenty of grit.

Should the cholera or roup at any time make its appearance be prepared to check it. For cholera, mix equal parts of sweet oil and turpentine; give a teaspoon full to each one affected. For roup put a teaspoon full of aconite in one gallon of drinking water. I find that by working along these lines I bring twice as many turkeys to maturity from the same amount of stock as I formerly did and would be disappointed if I did not rear a flock of forty-five or fifty. These if properly cared for will bring that many dollars and makes the industry remunerative.

This money realized from the industry belongs of course to the woman, and the good man may, with the audacity of the crow, at this particular stage of proceedings ask for an interest in the enterprise; if he does, tell him as kindly as you can that you are opposed to trusts and are not conducting business under the laws of New Jersey.

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## MODERN SCIENCE.

By R. N. WILLCOX, Avery, O.

[Read at the Farmers' Institute held at Milan, Erie County, February 16 and 17, 1906.]

What is modern science? I think we may class all sciences under this head. The old classification was, mathematics and logic for abstract science; astronomy, geology, biology and sociology for the concrete, and for the combination of abstract and concrete, mechanics, chemistry and physics. These were all sciences in years past and gone, and they are all sciences in these, our modern times.

In examining the old sciences we find logic and mathematics have been the least improved, yet I think we may claim them with the modern thought which has been applied to them. In the concrete we find a greater change. There has been such an advance in the knowledge of astronomy for instance, that we should be really lost if we had to go back a thousand years and take the knowledge of that time instead of ours of today. Again, what an advance we have made in our ideas of geology and biology. It is through the advanced thought on these two sciences in connection with sociology, that we are living today on a higher plane than do our brothers, the Hottentots and the Bushmen of Southern Africa.

But when we take the abstract-concrete, mechanics, chemistry and physics, we find a still greater change. It is through mechanics that all the great discoveries have been brought where they may be utilized by the human family, such, for instance, as the application of steam to the cars on our railroads, which take the place of the old-time stage coach and ox and horse teams, to haul our produce to and from market and to propel ships, thus giving us the rapid ocean steamers instead of the slow sailing vessel; the application of electricity in the telegraph, lights, etc. Can we, and do we ever think of the great change that the telegraph and telephone have made in the business of our present or modern life? Do we realize that were it not for the telegraph and steam it would take months to learn that our brethren in India are dying for the need of the surplus grain that our western friends are burning for fuel, and that were it not for the application of steam, all India would starve to death before we could get an ounce of grain there to relieve their wants?

We may class the discovery of gas as the result of another of our scientific efforts. Gas and electricity are powerful elements conducing to the comfort of the human family, and we find one or the other in many of our modern homes. Then if we come down closer to every-day life and examine the homes and farms, we shall find a thousand things that modern science has produced for our benefit. On the farm we have the new sulky plow, where a person may ride from morning till noon; may be drawn by horses or steam power; then comes the harrow which may be used in the same way; the planter, cultivator and drill, the harvester, thresher or sheller, cutter or shredder, and the wind mill. In the home we will name the range to take the place of the old fire-place, the sewing machine, the washing machine, the hydrant, the cream separator, the couches, the spring beds, the cases of books, the organ, the piano, and a thousand other things which has been given by modern science.

We have just named a few of the outgrowths of modern science that have sprung from the mechanics. We now wish to present the others, that of chemistry and physics. These are the sciences which investigate the elements of which all bodies are composed, and the laws which regulate the combination of these elements and the relation of compounds on one another. It is through these sciences that the properties of the juices of plants for medicinal purposes have been learned. Although this is an old science, yet I think with the improvement we have made in the practice of medicine that we may claim it as modern. Though I do not agree with many of the theoretical ideas that are being advanced by the several schools of medicine, yet I am fully satisfied that the treatment given even by the old school, is far in advance of the practice of seventy-five years ago. The practice then was about like this: If a member of your family had become fatigued or fainted through heat or over-exertion, the remedy was to draw a quart of blood from the left arm. If pain was in the region of the side or back, draw a quart of blood from the right arm. If the pain was in the head, draw a quart of blood from each arm, and then give so many grains of blue mass, to be followed with a double dose of oil, with a Spanish-fly plaster over the side and back, and if the patient was alive in twenty-four hours, send for the doctor again. This was about the treatment given the sick when I was a boy. I have seen nearly half a gallon of blood drawn from the arms of my mother because she had fainted by being overcome with heat. The present treatment of the old school is bad enough, but it is far more humane than that of those olden times, and modern life is having the benefit of modern thought in medicine.

But we must not tax your patience too long. We have thus far only spoken of the physical sciences; but this paper would not be complete if we did not give a short chapter on the mental and moral phases of modern science. To find out what our modern growth really is, we must go back several decades and show what were the moral and mental capacities of the people at that time. We do not intend to preach a sermon, or advocate any particular religion, but to show the advanced ground upon which we stand at the present time, we must show what were the moral and mental status of the people years ago. Four hundred years ago the people of Europe burned at the stake those who had advanced thoughts and advocated them. Less than three hundred years ago, down in Salem, Massachusetts, they whipped, drowned and burned innocent people because they believed something that their judges did not. There was a penalty of death attached to the profession of a Quaker, and for advocating any new art, belief or science, a severe penalty was sure to be administered, and for this reason the sciences made slow progress. The mental capacity of the rulers could not conceive of any advance, and, to a great extent, like ruler like people. The physical sciences had to be learned and taught to the people before the moral and mental could get substance for growth.

We might examine into the past and quote history from the dark ages, to show how little science they seemingly had in those olden times, and how our forefathers made less advance in two thousand years in the physical sciences, than we have made in the last century; and how they made less growth in the moral and mental sciences since the recorded birth of the creation, than we have made in the last two hundred years. You will not expect me in this short paper to point out what were the prime factors in holding them so long in darkness, or expect me to give the reasons why we have made such grand strides in the last century. These are subjects on which volumes could be written without exhausting the subject. But modern science in modern life embraces all recent improvements, which includes almost everything there is in existence, for who of this day and age of the world would go back and use many of the works of the olden sciences, such as the old plow with a wooden moldboard drawn by a couple of cows; the broad-cast and hand-planting of grain; the hand hoe, the sickle and later the grain cradle; the flail for threshing, and wind for a fanning mill. And, in the home, the hand cards, the old spinning wheel, the hand loom for weaving the cloth for our wearing apparel and the hand and needle for making them. With the use of these implements there was some improvement over those of older date, yet it gave our parents about eighteen hours' work out of the twenty-four to feed and clothe us, their children. With modern science introduced upon our farms and in our homes, we manage to get along with eight or ten hours' work in a day, and some of us with less. This gives us the same number of hours to rest that our forefathers had, and several hours for study. With these surroundings we ought to know more than did our fathers; if knowledge is power, we ought to be more powerful; if we develop our mental powers and they open up our moral faculties, we ought to be a more moral people than those who lived one hundred or two hundred years ago. By using modern science in our every-day life, we are becoming an educated people. But whether it will be better for the American nation in the long years to come, I can not answer. We know it takes brawn and muscle to build our railroads and work our farms, and that science will be able to fill in the work when brawn shall fail, we all hope. It is true that in the long future we shall have less forest to clear than in the past, and our farms will be more productive when science shall have told us how to treat them. Right here opens up another subject for a whole lecture: How should the farmer be educated? And another: Are we giving our children the best education they can have under existing circumstances? If we are, it is well; but if we are not, would it not be well to study this question and with the assistance of government, clip off some of the superfluous, and put in their place something that will be more practical and useful in every day, modern life.

We have not been able to particularize the points in this subject for want of space, and in closing we can only speak in general terms. With the improvement we have made upon the old classification, we claim all of the above-named sciences as our own, or of modern growth; especially those pertaining to the mechanics. We could particularize and draw an extended pen picture of the modern home, but it would make this article too long, and we will simply say that modern homes are perfect paradises here on the earth. We know our experiences with chemistry and physics are highly gratifying in modern life, and we all thank our stars that we did not live a hundred years ago to be treated by the then practicing physician, and I think we all thank Providence that we did not live four hundred years ago to receive a treatment of the whip, water and fire.

But let us all drop a tear of sympathy, as we think of the olden times, and the people of long ago. They were born in the day of superstition and mental blindness, and it took those long years to work up to our point of enlightenment. In studying the history of the races, we find that we have all



come from a lower, and are striving to a higher development. As we grow out of the animal we shall become more human, and as our mental nature expands we shall become more moral.

In speaking of education, I should not be doing myself or my subject justice, if I did not call your particular attention to this point. I am not a "calamity howler" nor particularly a "crank," but from the best information I can obtain I have no doubt that we are training the intellectual at the expense of the physical. It is the opinion of some of our most scientific scholars, that if we continue this mode of instruction for the next one hundred years, we shall have a race of physically dwarfed people. That is, the physical powers will give way under the mental pressure which they will be called upon to bear, and our people will become a nation of idiots before they arrive at the meridian of life. Will it not be well to look into this?

We stand to-day at the dawn of an extraordinary age. Freed from the chains of ancient thought and superstition, modern science has begun to win the most astonishing victories that have ever been known. One by one it has dispelled the doubts of the ancient world. Nothing is too difficult for it to attempt; no region so remote that it can not be penetrated. It has robbed the earth of her secrets, and sought to solve the mysteries of the heavens; it has chained to the service of man the elemental forces of nature; it has made fire a steed, the winds a minister, the sea a pathway, the lightning a messenger; it has descended to the bottom of the sea, and gone above the clouds and tried to analyze the stars, count the constellations, and weigh the sun; distance has been almost annihilated, time annulled, the invisible seen, the inaudible heard, the unspeakable spoken, the intangible felt, and the impossible accomplished.

All this has been, and is being done by modern science, and results are adding to the comfort and happiness of modern life.

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### THE AVERAGE FARMER.

By SOLOMON JOHNSON, Stryker, O.

[Read at the Farmers' Institute held at Bryan, Williams County, January 1 and 2, 1900.]

Is the average farmer a failure? Is the average lawyer, doctor, preacher, merchant, or mechanic a failure? In a word, is the average man a failure? At the very beginning I wish to say most emphatically that in my opinion the average man is not a failure. As a matter of course, if we hold up before our eyes a perfect model in any of the occupations few of us can expect to attain it. We may have higher moral, social, and religious ideals than we can ever attain; yet because we fail to reach our high ideal is that any reason why we should give up the effort and conclude that God made man in vain and that there is no hope for us? As compared with the perfect we are failures. Perhaps as compared with a few of the most prominent in any profession or occupation the great mass of people seem to be failures, but they are not so. We have in our country a few lawyers, doctors, and ministers that are known the world over for their integrity, learning and ability, but the great mass are unknown. Are they failures? We have a few merchant princes each worth a million or more. Do we gauge the success or the failure of our merchants by such a standard? Certainly not.

Our government is not a success because a few of its leading citizens are a success. It is not even a success because a few good laws are upon the

statute-books. A government can only be first-class when a great majority of its citizens and of its laws are first-class. If the government of this great state is not a failure it is because its average citizen is not a failure. In every free government the rulers get their authority from the people. How can such a government be a success unless the people composing it are intelligent, prosperous, contented, and happy? The fact is that it would be impossible to maintain a republic in any country in which a majority of the people were ignorant, discontented and vicious. In a republic the government and the people are so intimately connected that the success of the one depends upon the success of the other.

I have no sort of sympathy for a public speaker, whether he be lawyer, preacher or politician, who says there is no hope for the average man. Such a person does a great deal of harm by discouraging the very persons whose encouragement would do the country the most good. While much depends upon the leaders in every science, occupation, or calling, much more depends upon the man in the ranks. This is no idle assertion, it is a fact admitted by every true leader, no matter what his occupation or profession. In battle, where so much of the success of an army depends upon the shrewd moves and thorough knowledge of the situation possessed by the general in command, the honor of the victory in a great measure depends upon the individual heroism and pluck of the man behind the gun.

If Ohio is a great agricultural state I am safe in saying that it is not because a few of her farmers have made a great success, but it is because her average farmer is not a failure. I think I am safe in saying that Ohio is above the average as an agricultural state so far as her soil and climate are concerned, and so far as the general intelligence of her citizens is concerned she is at least the equal of any other state in the Union. Perhaps we are a little inclined to boast of America and of American institutions, but I am proud to refer to the fact that more than fifty years ago that eminent French writer, Alexis De Tocqueville, asserted that no other nation in the world had made such rapid progress in trade and manufacture as the United States, and that its commerce was second among all the nations of the world, and judged by the general intelligence of its people it was the most enlightened. It is needless for me to say that the American farmer of that time contributed his share to that general intelligence. Since then has the average farmer kept pace intellectually and financially with the other classes?

Before answering the question I wish to say that I am not now and never have been tainted by class prejudices, yet I am compelled to say that if the farmer's general intelligence has not kept pace with the general intelligence of the people of any other calling he, himself, is to blame. Improved machinery and improved methods in almost every other branch of business except farming has had a tendency to dwarf the intellect of the operator. Fifty or sixty years ago our boots and shoes, wagons and buggies, and many other articles were almost entirely made by independent workers, most of whom could make an article from beginning to end; but now with machinery each worker makes a small portion of an article. He goes over the same process day after day, and year after year, and thus becomes an expert within narrow limits; but what opportunity has he for either physical or intellectual development? No wonder that he cries out for a shorter day so that he may have some time for self-improvement! How different with the farmer. Every improvement, or nearly every improvement, made for the advancement of his calling has been such as to compel general intelligence on his part. One day he uses a mowing-machine, the next a self-binder, the next a grain drill, and the next some other machine, all of which the average farmer must handle and must handle skilfully in order to be a success, and that is a better intellectual drill than many of the

lessons learned in the public schools. There is much variety in a farmer's work which consists in part in sowing and reaping, buying and selling, selecting seed, grain, and stock, all of which tends to give him some idea of the world in a general way. This training in a general way is no doubt the reason why he is so often a success when he engages in some other calling. I think that no one will question the assertion that the farmer has an excellent opportunity for self-improvement unless he is compelled to labor incessantly to get even the necessities of life.

As to the financial outlook of the farmer I am not so positive that it is as bright as it should be. Many politicians during the past twenty or twenty-five years have been trying to show the farmer how he has been neglected, how he has been robbed, and how down-trodden he is, and then in the course of events when these same sympathetic men get a good fat office each they begin to preach the doctrine of prosperity and proclaim from every platform how prosperous every one is and especially how it has overtaken the farmer. They exhibit a long list of articles with prices attached to show the farmer how nearly everything that he has to sell has increased in price, while most things that he has to buy have decreased; but, while he who has succeeded in getting a good place is preaching that doctrine, the one on the outside is reversing the argument and proclaiming that it is not true, and to prove his assertion he exhibits a long list of necessities that have increased in price, including nails, glass, roofing-material and binding-twine, which were omitted by the other orator. It would be well for the average farmer, and for all others for that matter, to pay no attention to these croakers, for in this, as in most other cases, the truth lies between the two extremes.

The average farmer's success is largely the work of his own hands. Government can do but little for him; in fact the great mass of American farmers demand not favoritism but equal opportunity. A government's business ought mainly to consist in protecting its citizens in their lives, their liberty, and their property.

The average farmer as a rule carries on a system of mixed farming. He may be an expert hog-raiser, still he raises a few cattle and sheep. His farm may be well adapted to wheat-raising, yet if he is wise he will raise some corn and oats, hay and seed, or other staples. On account of the fluctuation in the price of all kinds of farm products I very much doubt whether an average farmer can afford to be a specialist to the neglect of everything else.

Some years seem to be the most prosperous for one farmer and some other years for another farmer in the same locality and even in the same branch of farming, so that one farmer may have been prosperous in 1896, another in 1897 or 1898, and still another in 1899, while other farmers may have experienced very hard times during these same years. On January 20, 1893, dressed hogs sold at nine dollars per hundred in our local market and in August, 1894, oats brought from thirty cents to thirty-three cents per bushel, but at that time wheat was very cheap. Thus we see that farm products have their "ups" and "downs," so to speak, but I think that the observing farmer will find that the different kinds of products are not generally all dear or all cheap at the same time.

After the average farmer has his crops ready for market, the question when he should sell them is in some respects one of the most difficult problems for him to solve. I well remember the fall of 1891. Wheat was worth from ninety cents to one dollar per bushel. There was a famine in some parts of the old country. Our country's laws were in excellent order for keeping out the wheat "produced by the pauper labor of Europe." The agricultural press of the entire country

advised farmers to hold their wheat and they would be sure to get at least one dollar per bushel for it. The prospect did look favorable and many farmers held their wheat until it went down below the cost of production. The farmers of this county alone lost thousands of dollars, mostly because they followed the advice of the agricultural press.

A year ago last fall one of the leading agricultural papers in the state was again engaged in the same injurious business. You could scarcely pick up a copy of that paper without finding some advice to the farmer as to when he should sell his wheat. He was cautioned not to rush it to market and then he would be sure to get a fair price for it; but the fact is that the farmer who threshed early and sold immediately got from seventy-one cents to seventy-three cents per bushel, and those who held on have never been able to realize that price. I am clearly of the opinion that no one can estimate with any certainty the future prices, and it seems to me that the farmers must decide this question for themselves "with fear and trembling."

One of the most successful farmers of my acquaintance told me that he always sold his crops as soon as he could get them ready for market and that he was sure he made money by so doing. My own experience has been rather uncertain. Sometimes I have lost money by holding a short time and at other times I lost by selling too soon, but as a rule I sell my crops about as soon as I can get them ready for market.

When a farmer has his products ready for market, what an excellent opportunity he has for getting them there as compared with that of fifty or seventy-five years ago. At that time the country was thinly settled and the wagon, the stage-coach, and the canal were about the only modes of conveyance. The local buyer had no means of knowing what an article was worth in the east until weeks after his purchase. At that early day without the modern modes of communication and conveyance it was impossible to do business as rapidly and satisfactorily as at present. At the present day we could not get along without the telephone, the telegraph and the railroad, and soon the electric car and the automobile will be an absolute necessity, and all of these means of communication and transportation will add as much to the well being of the farmer as to that of any other class.

Let us hope that these improvements will be made without any watering of stock and put on a sound business basis, so that rates will be such as to put their advantages within the reach of the average man. Cheap telegraph, telephone and railroad rates when based on sound business principles are a blessing to all classes of our citizens in many ways, but more particularly from the fact that they encourage communication between different sections of our country and that enables us to become better acquainted with one another and that in turn has a tendency to prevent sectional prejudices.

In conclusion I am inclined to think that the future of the average farmer is as bright morally, socially, intellectually, and financially as it is for most other classes, and if this be not true the future prosperity of our country is very uncertain.

## WHAT TO DO; AND WHAT ARE YOU DOING?

By HENRY D. LEMON, Newtown, O.

[Read at the Farmers' Institute held at Blueash, Hamilton County, January 5 and 6, 1900.]

Farming, like any other business, offers considerable variety and many different modes of accomplishing the same result. The kind of farming engaged in should be determined by the situation, conditions, surroundings, tastes, habits and desires of the man himself; for instance, we should certainly not think of engaging in truck farming thirty or forty miles from a good market, or running a dairy for the purpose of retailing milk direct to the consumer, unless very near where the consumer lives. Only the lower wholesale prices would be obtained, and this added to the trouble and expense of transportation, the net profits derived would not compare favorably with those of our more fortunate colleague, living near a good market and getting top prices for all products. On the other hand it is not wise, when the farm is located within easy distance of a good market, and where land is much more valuable, to raise the same crops and adopt the same methods as the man living at a distance. This is certainly not the thing to do in either case, and will only lead to disappointment and verify the common saying that farming does not pay. There are many men in Ohio today, influential, prosperous and happy farmers, who have made fortunes from sheep, cattle, hogs, grain, butter and cheese, or some other product that could be condensed or concentrated into comparatively small bulk and shipped to distant markets, and the entire resources of the farm, in this manner, turned into money. You all know, or have undoubtedly heard of, truckers near our large cities who have grown rich from the products of a few acres. They realized the situation, took advantage of their location, knew what they were doing, and did the right thing at the right time. Therefore, if a man prefers a certain kind of farming and enjoys the pleasure of possessing numerous broad acres with woodland pastures and refreshing shades and hills, vales and brooks, with fields of moving, wavy grain, and barns overflowing with abundance, then must he indeed seek them far from the busy marts, the hum, noise, confusion and strife of our cities and towns. His products will be sold in bulk in distant markets with fair profits and satisfactory returns. The man with a taste for trade, who likes to mingle with people and is desirous of having something coming in every day, should be located near a good market, where his wagon will be seen daily all through the market season. He will be doing what he enjoys and both will succeed.

Of course I shall not attempt to enumerate the many different kinds of farming that would apply in different localities, but will only add one more point briefly under this head before leaving it, namely, that we farmers are too prone to adhere to old ideas. This is a progressive age. Every one is moving forward and the farmer cannot afford to be left behind. We must inject more business into our farming, in fact we must make it a business in itself. It was a maxim many years ago, and a correct one at that time, not to buy anything you could raise or produce; at the present time that may be farming, but it is not business.

We of the river bottoms should confine our farming to the production of such vegetables and grain as our soil will best produce, and the feeding and fattening of stock during the winter season, thereby turning all our products into money; but we must learn to depend upon you of the clay lands and hills for our fruit, feeding stock, and many kinds of vegetables better adapted to that soil

than to ours. You must look to us for your corn, and perhaps other food and products needed by you during the year that can be more cheaply produced by us. Now, brother farmer, let us change the old maxim to suit the times. Do not raise or produce anything that you need or must have, if you can buy it more cheaply. This is a sound business proposition and in other kinds of business is strictly adhered to.

A New Jersey trucker was asked by a reporter for an agricultural paper what he had raised on a certain one-acre lot. He replied, "Seven hundred and fifty bushels of oats." "What, do you mean to say that one acre produced seven hundred and fifty bushels of oats?" "Oh, no, I sold two hundred and fifty dollars' worth of onions from that lot and bought oats to feed. That is my oats patch." My friends, the time has come when we must buy more and depend more upon one another.

What is known as general farming was to a certain extent necessary fifty years ago, but that was a different age. Farmers then felt that they must raise what was needed or do without. Even the country merchant was compelled to trade part, at least, of his goods in order to dispose of them. Wheat was always sent to the mill to be ground for family use; to buy flour was considered poor farming; wool was carded and hemp was spun; very little actual money was used and very little was needed. Habits were formed that remain until today, habits that should have been hung up with the sickle, cradle and scythe. The farmer of today should study his farm, its location, its advantages, wants and needs. If underdraining is necessary, begin and do what you can from year to year. If your stable is not provided with cement floors, have it done as soon as you are able. It will pay 100 per cent. on the investment. Try, if possible, by feeding stock, by a rotation of clover, or in some other manner to increase the fertility of your soil. Do not raise or attempt to raise anything that is not adapted to your farm and will not pay a fair profit for the money and labor expended. Buy for cash if you have to borrow the money and pay 6 per cent. interest on it; when you buy on credit you pay a much larger percentage than this. Buy what you must have unless you can raise it at a profit. Do all of this, consistently, intelligently, and success is assured.

Now, my farmer friends, what are you doing? In the year that has just closed, do you know what you have done? After the bills are settled, and you find your funds running low, it is so easy to say, "Well, there is no money in farming; I have worked hard all season, have everything on my farm, corn, wheat, potatoes, tomatoes and other vegetables, fruit, chickens, a few pigs, three or four cows, and just made a living." Now, from what particular thing or things did you make that living? Do you know what paid a profit and what did not? Were part of the profits derived from some crops consumed by losses on the others? If so, what were they and can the cause of failure be removed? If it cannot, drop that crop and grow more of the crop that does pay.

The farm that does not show a profit on anything grown upon it, on which all crops are produced at a loss, which shows that you are dropping behind each year is not profitable. Better drop that farm at once, or it will drop you. There is no merchant so prosperous, no corporation so wealthy, and no speculator so bold as to continue dealing in commodities that are certainly losing investments. Why, then, will farmers do this? Because, my friends, we do not know what we are doing. Some crops pay and others do not and the average is not very flattering. Ask almost any farmer, as you would ask any other business man, what are his profits on certain merchandise manufactured or produced and what will be his answer? What was the profit on your wheat, corn, potatoes, fruit, stock, butter, eggs, hay, etc., during the year. Do you know what you have done, do you know what you are doing? If not, why do

you not know? Guess work will not do, you must know if you are right. In this age of machinery and improved implements of all kinds, tools of modern make and skillful hands perform all work needed. The small, inexpensive little lead pencil is about the least used, but by far the best implement ever placed in the hands of the farmer.

Our Institute meetings, our farmers' clubs, Granges, etc., are all splendid helps. If we have started right at home, by close attention at their meetings, we learn much in connection with the planting and growing of crops, their cultivation, what seed to use and how to preserve and retain the moisture necessary for their growth. Even the minutest details are explained. There is nothing grown upon the farm that is not fully discussed.

We feel that we know a little more about many things of which we had only a partial knowledge before, and a few more new ideas added to them. We may go home with the determination, however, to farm harder than ever this year. "Why," think we, "almost everything pays to grow on the farm" (and so it does it not all undertaken by one man, or on one farm), so we try almost everything with the sad conclusion next fall that we always thought farming did not pay and now we know it. Had we known what crops would pay best in the locality, what would succeed best and prove more lucrative on our farms, and applied the knowledge obtained to those particular crops our conclusion would have been: "Farming does pay and I always knew it."

My friends, let us weigh well and carefully consider after thoughtful study and close observation what will pay on our farms, not what is best for some one else, what they have done or are doing, but what we can and must do. Without desiring for a moment to sacrifice any sentiment in connection with farm life, I will say that more business and less farming is one of the remedies for hard times so prevalent among farmers.

Let us think and carefully consider for a moment. On the farm, outside of the home grounds, comprising the house, barn and other buildings, which, of course, should be made as neat and attractive as possible, there should not be a foot of land upon which taxes are paid, except what is unavoidable along fences, roads, ditches, etc., that does not produce a fair profit on the money it represents. All other lands should be sold or dispensed with as should all stock of any kind, implements, tools, vehicles, or anything that does not contribute to the sum total in swelling the profits for the year. Of course, this does not include horses and carriages, etc., kept for the use and pleasure of the owner and his family.

Look over the farm, search out the leaks, and with unsparing hand stop them at once, lay aside custom and habit and old time ideas and come down to cold facts, and start with the purpose of farming at a profit. Study and thought will reveal much that you never thought or dreamed of.

You will then perhaps know whether that flock of old hens roosting in the shed by the barn is paying a profit on the feed and care bestowed upon them, or those pigs grunting in the pen where the family pork is manufactured with the thermometer lingering around zero, are causing more work and bother than profit, or the much-talked-about, highly-praised, indispensable family cow that requires milking twice every day, besides feed, work, churning and care of milk, and the surplus milk to be carried to those grunting pigs, who never seem to get enough, and the surplus butter traded at the nearest store, for fifteen or twenty cents per pound and paid for in inferior goods at first-class prices.

There is money in chickens, pigs, or cows, as a business; but to have your wife take charge of all three combined, together with a thousand other things, is to be at least fifty years behind the present age. I do not believe there is any set of men on earth, as a class, that are more loyal, more true, more loving and

devoted, or who would do more for their wives than the farmers, but when the harvest is gathered and the summer work finished, and the cold, wintry blast drives us indoors, to toast our shins by the cheerful fire, do we not sometimes forget that she has no leisure season?

My friends, we must wake up; we must use that lead pencil; we must study to find what it will best pay us to raise through the summer, and in the winter we should not drop all employment but should carry on the farm by feeding stock as a business, raising chickens for eggs or meat, or both, for market, or fattening pigs for the same purpose; or keeping several cows to furnish first class butter or milk at paying prices, and with the profits buying what we do not produce from some farmer in that business. The inauguration of some such system as this would reduce the work and trouble and chores on the farm one-half. By the use of modern machinery, and thought and close attention, we would be able to do a few things well, and obtain a profit on our work. Much of the inferior surplus of farm products would be removed from our markets, insuring to us good prices and fair profits, and to the consumer first class goods. Our wives would have more time to devote to their families and to their friends, and the monotonous drudgery, that forerunner of insanity, would become a thing of the past. Then that august relative, "Uncle Sam," would perceive that we really live and exist like other people, and are prominent members of his family, and would give us what we should have had long since, free rural mail delivery, and from that time on we would be ready, as the little Farm Journal says, "to sit down at the first table." Let us then look into the business part of our calling in a business-like manner. Then, and then only, will we know what to do and what we are doing.

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### QUALIFICATIONS FOR A SUCCESSFUL FARMER'S WIFE.

By MRS. D. B. WYLIE, Mt. Perry, O.

[Read at the Farmers' Institute held at Mt. Perry, Perry County, January 29 and 30, 1900.]

In proportion to the importance and difficulty of a work, are the qualifications required for the performance of it, hence the qualifications for a successful farmer's wife are neither few nor small, because the work is both difficult and important.

We would mention first as a qualification, intelligence. We can think of no other occupation in which men are engaged where the wife is so completely a partner as on the farm. On the farm the home and place of business are one, and she should be intelligent enough to understand all business details. As a partner, she is entitled to a complete knowledge of all important business transactions and the financial standing of the firm and a right to the use of a large share of the profits, accumulated by mutual work, economy, and a determination to be successful. The intuitive judgment of an intelligent woman is often more to be relied upon than the more elaborate reasoning of man, and the husband of such a woman will find it to his advantage to consult her.

We do not find the sons of the intelligent wife anxious to leave the farm and go to the city to find something to do, so as to escape the so-called drudgery on the farm, nor do we hear the daughters wishing for city friends. It is true many boys do leave the farm every year, and will so long as merchants, and commercial men of all classes who employ help, give farmers' boys the preference, as they do today. The reason they are preferred is because they



are schooled in economy and industry from their earliest years, and have ingrafted in their nature a love for progress and independence. Then, too, the intelligent wife is a successful home-maker. When necessity takes the children from the home-nest, they go out into the world fitted for the new life and with the full belief that there is no place like home.

Second. She must be strong-minded, that is, have will-power, or she is liable to become a drudge, allowing herself to forget all education or accomplishments she may have possessed. Her trials are so numerous she has need of a will-power which is monarch of the mind, giving directions to all its movements.

Third. She must be economical, study to economize time, strength, and money. It takes but a small percentage to make the difference between profit and loss, and one of the greatest obstacles to success is the unnecessary expenditure of money for articles for the family.

Fourth. The farmer's wife should be progressive, seek improvement along such lines as will broaden her views and lead out those about her. She should strive to advance to a higher plane. There is much said about woman's advancement in the press of to-day, many women with one idea harp so continually on woman's wrongs that some of the weaker minded appear to believe they are in some manner abused. No one can make progress by bemoaning her condition. If we were advising we would say her progress would be best prompted by cultivating a spirit of contentment. Many women waste much more strength and nerve force in fighting against their destiny than would be required to bear it patiently. Many seem to think they should be delivered from whatever they dislike, and some of their greatest dislikes are cooking and sewing. So much stress is laid nowadays on the preparation of food as a means to health and as constituting the most permanent "tie that binds" a man to his home, that we make no apology for straying far enough from our subject to quote Mrs. Cahoon's definition of cooking: "Ask a woman what cooking means and she will tell you, it means the patience of Job, and the persistence of the Pilgrim Fathers — and it means the steaming and stewing and the baking and boiling thrice daily spring, summer, autumn and winter, year after year, decade after decade. It means perspiration, desperation and resignation. From her judgment and reason she must evolve triumphs that depend on salt, pepper, sugar and herbs. She must know how soon, how much, how long and how often. She must know quality, quantity and cost — then she must rise above it all and be a lady." Many of the tiresome worries may be dispelled, however, and little duties made to assume a grandeur that is inspiring by taking time to look into some cherished volume, and receiving such soul-reviving draughts of mind-nourishment as will give cheer to proceed with the petty yet noble details of everyday work.

To be progressive the farmer's wife should read more than she does. She should be acquainted with history, discoveries, inventions, religious progress, politics, current events, and all that go to make up everyday life. To her whose time is limited, we would say one weekly or monthly well read and thought over will keep her informed on the most important events. The progressive woman of today should be equal to any emergency and still not lose her womanly dignity.

The farmer's wife should be an educator. She should be thoroughly educated herself, not only as to the needs of the home and family, but of the commercial, intellectual, moral, religious and political wants of the nation, of which she forms an important part. It is an old maxim, "The hand that rocks the cradle moves the world." If that be true the responsibility that rests on the farmer's wife is not to be sneered at or evaded. The hand that rocks the cradle in the farmer's home controls forty per cent. of the population of the United States.

This education cannot be obtained in the ball-room, card-parlor or dime-novel, neither can it be obtained by a school education alone, no matter how thorough that may be. It can only be obtained by constantly replenishing her stock of knowledge by observation, reading, thought and honest discussion. It is when thus educated she is the true help-meet of man, with mutual interests. She must inevitably regard her work as worthy of the highest education and enthusiasm. Many of the great men who have made an indelible mark on the pages of the world's history and on the hearts of American patriots were sons of farmers' wives.

Farmers' Institutes are a means of education as well as of entertainment to a large number of people. They do much to enlighten, broaden, and educate the people where they are held. At these meetings one comes in contact with some of the chief educators of the land, listens to the experiences of successful farmers, stockmen, dairymen and horticulturists. Farmers' families need to improve every social and intellectual advantage offered, as isolation and lack of education are two of the greatest objections that can be urged against the desirability of agricultural pursuits. Every farming community should realize that in itself lies the means of educating sons and daughters to love the farm and farm life, and because one does not have the privilege of the town or city, there is no reason why he should stagnate either mentally or socially. The stream can not rise higher than the fountain. The fountain of our country is the home. It was of divine origin, an institution established by God for the benefit and advancement of mankind and woman, especially the farmer's wife, is the moulder of the home, and she should make it a fit dwelling for that best specimen of humanity, the Ohio farmer.

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### WHAT ARE THE INDUCEMENTS TO KEEP THE BOYS ON THE FARM?

By JAMES McOWEN, Ovid, O.

[Read at the Farmers' Institute held at Jersey, Licking County, February 2 and 3, 1900.]

Every boy should, as soon as possible, determine for himself what his life work shall be, or at least the starting point for such work. Naturally he will choose that vocation which seems to him to offer the greatest inducements, the one in which he thinks he will most likely be successful. There are a great many things that he should take into consideration in deciding such an important matter. Life is too short to make any mistake. A few years lost in indecision often means twice as many years lost in retracing unnecessary steps. Five or six years of wasted energy in the vigor of early manhood is a terrible loss, hence the necessity for every boy to give this question his most earnest thought. It is undoubtedly true that in the different vocations of life the successful ones are those who thoroughly understand their work, who have commenced at the bottom and worked their way upward or onward, step by step, and have mastered all the details and become familiar with all the intricacies pertaining thereto. It is true that new problems are constantly arising in all different branches of science and industry, but he who is well grounded in the general principles of his work will be able to cope successfully with any new problems that may arise. It follows logically that the boy reared on the farm, who, when he reaches his majority, has had a thorough practical drill in all the work of the farm, who has had a fairly good education and has been

reading a practical agricultural paper every week and the bulletins from our experiment stations, as every farmer boy should, is as well prepared for successful farming as he could be for any other work in perhaps ten years. Not that it will take ten years to acquire a theoretical knowledge of any of the professions or other industries, but the young man is more than ordinarily successful who has gained a practical knowledge sufficient to insure him a sure footing in less time.

I do not wish to be understood as urging every farmer boy to stay on the farm. There are other callings just as necessary as farming, places of honor, profit and trust to be filled and they should be filled in part by boys from the farm. First, because they cannot be filled as well from any other place; second, because farmers should be represented in all the other kinds of business in which they are interested, and third, because there is not room for all the boys on the farm; but what I wish to make clear is, that the farm holds out as great inducements to the farmer boy as any other calling. It would be well for the boy before making up his mind to leave the farm to ask himself if farm work is particularly distasteful to him, if he is sure of making a failure if he should stay on the farm, if he is sure that there is some other work that would be more congenial to him, if he has decided what that other work is and if he feels so interested in it that he is sure of making a success of it and is willing to spend his time, his energy, and his money to fully qualify himself for it. If he can candidly answer all these questions in the affirmative, by all means let him leave the farm and follow his chosen calling. If, however, his reason for wanting to leave the farm is that the work is too hard or too continuous, that there is not enough of leisure, and that he expects to find some situation in which he can get along without much work, I think I can safely say that he will make a failure in whatever he undertakes. Success is not a product of chance; it is gained only by energetic, persistent effort.

To say that a boy should stay on the farm of course implies that he should be a farmer; it may, therefore, be well to state what we mean by the application. He need not necessarily be a drudge, but he must be a worker; he should know how and when to perform all kinds of work required on the farm from ploughing the ground to gathering the crop, from seeding the meadow to mowing the hay and getting it in the barn; he should know how to feed and care for all kinds of stock, how to build fences and repair them, how to dispose of his products to the best advantage, and numerous other things that I need not mention; in fact, no one but a farmer knows what a farmer needs to know. In addition to all this he should be and generally is a business man; he should be able to buy and sell to advantage, because he sells largely of what he raises and buys much of what he uses; he is constantly coming in contact with business men of other callings and imperceptibly he is absorbing business knowledge. Necessity compels him to read and think and keep posted in business affairs. His schooling on the farm has had a tendency to make him a close observer, to go slow and be sure of his ground, hence he is not often caught at a disadvantage by men who have made sharp business practices their particular study. He combines in one individual the attainments of various different callings or professions, consequently his mind is broadened, therefore more prolific of ideas, which enables him to draw correct conclusions. In fact, a farmer should be, and can hardly help being, the grandest specimen of manhood, physically, morally and mentally. A boy reared in such a school, who has had a continuous drilling in industry, economy and perseverance from childhood to young manhood, who thoroughly understands all the work on the farm and has been familiar with all the business transactions, certainly has no mean attainments, and (unless for reasons that I have stated) I would certainly advise him to stay on the farm.

Let us now look at the social life of the farmer and see what inducements are held out to the boys. We are told by some that the farmer leads an isolated life, that he is shut off from all social privileges, that he becomes a mere drudge and loses all high aspirations. What a mistaken idea! My observation leads me to believe that farmers are the most social class of people to be found anywhere. As a rule they have several neighbors with whom they are on terms of intimate friendship, and not many days in the year pass without a friendly call from one or more of them; there are frequent afternoon or evening visits when labor and care are laid aside and the time given over to social enjoyment; there are generally relatives and old-time friends at a distance who make occasional visits, thereby giving a variety of social intercourse; there are the church and Sunday school that are generally easily accessible to most farmers' families, also frequent church socials that both old and young can attend and some evening parties where the young people get together and enjoy themselves; there are one or more agricultural fairs each year that the farmer and his family can, and generally do, attend with profit and pleasure and get a new installment of inspiration if they happen to need it; there is the Farmers' Institute which they can attend and learn a great deal that they did not know, and perhaps tell a little that they do know; last, but not least, they have the Grange, that great social, moral and educational institution. Within its gates all are welcome, all are equal and all are benefited; the pity and wonder is that all farmers, their wives, their sons and their daughters are not members of this great order. What an array of social features, and all tending to morality and virtue. I might add that the farmer is comparatively exempt from temptations of an immoral nature. His affairs keep him at home most of the time, and when business calls him away he is generally anxious to get back to look after some needed work; he does not pass a saloon every time he goes to and from his work; no gambling den is near to allure him; no one is awaiting or expecting him at the club. The pure air that he breathes, the healthy food that he eats, and the pure water that he drinks give him health, energy and vigor, hence he needs no artificial stimulant. Certainly a man with a comfortable, happy farm home need not envy his fellow-man in any other station.

If I am asked whether the farm offers any inducements financially to the farmer boy, I answer unhesitatingly yes. It is only necessary to look around us and see the comfortable farm houses with commodious barns and other outbuildings near to be convinced that most farmers are successful. I admit that colossal fortunes are not made on the farm, but the building of a true manhood is a greater thing than the building of a fortune. There should be something more in life than the mere accumulation of money. The man who has spent the greater part of his life in piling up millions of dollars may think he has been successful, but he has only made a failure of attaining the true object of life; he has become a man of one idea, one aim, the mere making of money. We do not have many such men on the farm and we do not want them, but we have plenty of manly men and we want them to stay where they are.

## THE FARMER'S DAUGHTER.

By MISS S. LULU MOORE, Milligan, O.

(Read at the Farmers' Institute held at Rehoboth, Perry County, November 27 and 28, 1900.)

It is said that in this country alone there are six million girls whose homes are on the farm or in rural villages. It is also said, and it is with a sense of regret I record it, that ninety per cent. of these girls feel keenly that of all people, they are the least favored. This statement was to me somewhat startling, although it is a recognized fact, that for some time there has existed a certain unrest among the young people of the rural regions. This disquiet has, however, been associated in my mind as applicable to the young men only, but the records tell us it is by no means confined to them. What the cause of this disquiet may be I cannot tell, but believe it to be largely due to their ignorance of themselves, their possibilities and the world in general.

Again, it has occurred to me that one cause of this very undesirable effect may be the estimation in which they are often held by the other trades and professions. This cause is not a worthy one, I will admit, yet it is not without its influence. In times past the farmer and those in any way connected with him, have been looked upon by some as a class of people who knew very little and cared far less for anything outside of farming and crop gossip; but in this day of intelligence such cases are very rare and where they do exist, I am somewhat inclined to think that the farmers with their sons and daughters are, in a measure, themselves to blame, for in this wide world we usually get what we demand, or rather deserve, although it is a cold, cold place, the commencement orators tell us.

It seems to me that farmers as a class do not give sufficient dignity to their calling and demand for it a just recognition. Often they do not think of conveniences, luxuries, culture and many things that are sought after and enjoyed in other vocations as belonging to their rank as well. How often suggestions for modern conveniences which would be, not a luxury, but a great comfort to them, are met with the announcement that present conditions are good enough for country people. How often, when by chance it may be, a manual of self-culture reaches the country fireside, if read at all by the young people it is with the sneering assertion that such things are very well for city people, who have nothing else to do, but it will be of no use to them in raising corn, in scrubbing and cooking; their thoughts and interests are so much centered upon one particular thing that they become narrow-minded and bring words of reproach upon themselves when, in truth, they are the people who feed and guide this great republic and should elicit the highest respect of every one.

It is true that the farmer can not afford to neglect any duty which tends to success in his chosen vocation, but while he is seeking proficiency in his one line of work, he cannot afford to neglect other talents given him that he might enjoy the greatest share of life's blessings; for

"What wouldst thou say in Heaven  
When the Master asks, what hast thou done  
With the talents I have given?"

I gave thee wealth and influence  
And the poor around thee spread.  
Where are the sheep and lambs of mine  
That thou hast reared and fed?

I gave thee heart and intellect  
 Thy brethren to persuade;  
 Where are the hearts that thine has touched  
 Or minds thy wisdom went to aid?"

I hope I may not be considered harsh in my judgments but, as a farmer's daughter, these are a few of my honest convictions. I believe, however, that the best farmers, those who are active, intelligent and up-to-date, realize that the advantages enjoyed by other industries belong just as naturally to them and can be obtained just as easily. I believe, also, that the daughters of such have the least cause of any class of girls to murmur over their natural environments and possibilities.

Now, what are some of their possibilities and their chances of realizing them? To begin with, I am obliged to say they are so many and varied that the time limit will permit mention of only a few of them.

First, physically considered, no class of girls in the world has greater possibilities for development and improvement than the farmer's daughter. It has long been acknowledged that the brawn as well as the brain of the nation comes from the farm. The free, untrammelled life in the country, where one can "look from Nature up to Nature's God," gives that health of body and vigor of mind, not to be excelled anywhere. It gives that originality, that power of development for great things, that unquestionably broad view of things real, true and pure that is to be found nowhere else in this world. Rural life is one freer than any other from the responsibilities and anxieties which drain so heavily upon the nervous system. It is freer from moral taint because associated less with dissipation, vice and crime, so detrimental to the health of body and soul. So the possibilities of health, that boon of all boons, should be sufficient to quiet murmurs, even if this were all the advantages the rural maid could claim; but this is not all. We are led next to consider her mental possibilities, or in other words, her chances for education.

The farmer's daughter sometimes thinks it is not necessary that she should receive higher education for the sphere in which she lives, and I believe the cause of this feeling is the conception she has of the meaning of education.

If she believes with the leading educators of the day, that an education means a thorough preparation for the best and highest living, and if she is worthy of the name she bears, she will earnestly seek to obtain, by whatever means, the very highest and best education her time and opportunities afford. It is true that to the girl who is ambitious to cultivate the latent powers which lie within her, there is something of isolation connected with country life, but this is true only so far as she wills it. There is a mistaken idea abroad among farmers' daughters that in order to become refined and cultured they must pursue a course of training in some high institution of learning. Now, I do not wish to discourage any one from pursuing such a course, if an opportunity is presented to her, for mental training is of inestimable value to every girl, and can be received more systematically and effectively in some high school or college than elsewhere. Any girl who lets such an opportunity pass by unimproved commits a crime against herself and society at large. But not one girl in every five hundred has such an opportunity and it is for the encouragement of the less fortunate one that I say it is not really essential that she spend several years in college that she may be prepared for highest living. If this were true what would become of the hundreds of thousands of girls who cannot afford it? What ever developed the multitudes of women who never spent a day within college walls and yet are today women of the finest minds?

The object of a college is to train our faculties for our use as the tools of a

workman. It is this training, the discipline, the influence, that remains with us and not certain information and facts which we hold in mind, sometimes only until a successful examination is passed. Colleges are quite a stimulant and a convenience, but a possibility exists, which is far more than a possibility, for an education without this convenience, if only the desire to study and learn is sufficiently deep seated. Mental training is valuable, but self-development is far more lasting, because it calls forth greater effort, and efforts, well directed, are themselves the greatest means of development we have. In some respects, the girl in the city has the advantage in this development, by having within her easy reach helps, such as libraries, art galleries, museums, schools, etc., which are, indeed, great incentives, but the country girl, if she only knew it, has many greater advantages in her own community, although perhaps they may not be so conveniently arranged for her use. Many things which exist only as dead entities to the city girl, exist in living realities for us on the farm. For the farmer's daughter all nature blooms profusely and ministers to her every want; natural history, which the city girl gets largely from books and museums, the country girl gets from nature's own hand. The farmer's daughter is encompassed on every side with art—God's own handiwork—exhibited in every cliff, mountain and tree, in every hill, dale and landscape, in every cloud, mist and vapor, in a rich and infinite profusion not equaled in the finest art institute in the world. Music, the same as existed in the foundation of the world, "when the morning stars sang together and all the sons of God shouted for joy," exists still for her enjoyment in the harp-strung forests, in organ-tuned brooks and in the daily anthems of thousands of feathered songsters. Her social nature, which so often lacks development, because of imagined isolation, can find a very helpful stimulus in a community where comradeship and good feeling prevail, by the introduction of cooking and sewing clubs, Chautauqua circles and King's Daughters and, many say, by joining the Grange.

In fact there is no end to the means possible and within the reach of the girl on the farm, who is wide awake and determined to make the most of every opportunity. So, to the girls of every craft and to the farmer's daughter in particular, let me say as Napoleon said to his army on the eve of battle, "Today we are standing on the pyramid top of opportunities that have been formed by the labors of those who have gone before." We stretch forth our hands into the future with power to mould the destinies of unborn millions, while the fading splendors of the nineteenth century form a halo around us and we gaze with eager eye toward the twentieth, whose dawn gives promise of a morning of glorious possibilities, a noon of unrivalled prosperity and an evening of universal peace, if we will but weld together in one glorious chain the various links of duty, which conscience has shown to be ours to forge.

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## OUR SCHOOLS.

By MRS. W. B. CARTER, North Springfield, O.

[Read at the Farmers' Institute held at North Springfield, Summit County, February 5 and 6, 1900.]

The great drama of human life, written and devised by God himself, has for its theme, "Action." In this play there are but two scenes; the first is made up of an indefinite number of acts, equal in number to the different callings in life. He who would learn much of the beauty and symmetry of the second, must play well his part in the first. The purpose of this article is to cherish and

unfold the seed of immortality already sown within us, and to develop in their fullest extent the capacities of every kind with which we are endowed. This, some great man says, is Education.

Of all institutions, divine and worldly, none have aimed to accomplish this so completely as our schools, but in this great age of advancement we find they are far, very far from the ideal. While we are proud that the achievements of our schools are far in advance of those of past generations, it is a sad fact that in the grand march of progress they have not kept step with other improvements. Neither have the country schools kept pace with the city schools, but considering the obstacles in their path of progress they are much better than might be expected. What, then, is the cause of this condition of affairs and what must be done to remedy it? The parents exclaim with one accord, "The fault lies not in our children." The school boards cry out, "We are doing our part." The teachers think and some of them even say (to themselves), "We are doing wisely, acting nobly, 'angels could no more.'" But let us be frank enough to confess that all are in a measure to blame and the reason that so many different factors are involved makes it a most difficult problem to solve.

Various solutions have been given, but they have not yet produced the same result. Has the problem been stated incorrectly? Has it been misunderstood by some? Have the methods of solution been false? Or have the computations been inaccurate? If we would bring the schools of the future to a higher standard, let us look once more at this problem and start with the same conditions of the question. The first requisite of a good school is good parents, Christian parents, who will train their sons and daughters to cherish the pure, the true, and the noble, men and women who will keep in touch with the work of the school, who will not listen to the idle prattle of the children who, while they do not mean to be dishonest, are too young to make accurate judgments. Go and investigate for yourselves all points that may give dissatisfaction, and if you find nothing commendable in the teacher point it out to him with kindness; this would show at least that you are interested in the school, and if teachers are in the wrong they ought to be righted, but remember, a good judge never passes judgment until he has both sides of the question. Has it not sometimes occurred in your own dealings with your children that they have misunderstood you, and may even have accused you of being unkind or unjust when you know that you have only done your duty. Is it not possible, then, that these children may misunderstand and even misjudge the motives of the teacher?

Furthermore we need citizens who will elect only such directors as have at heart the best interests of the school, and who will then firmly and cheerfully stand by the board in enforcing such measures as are necessary for the good of our boys and girls. School boards should consist of good men and good women; while many questions arise which demand the thorough, business-like investigation and firm decision of a man, equally as many arise demanding the tact, refinement and delicate taste of a woman. Members of a school board should be paid for their services, then more could be expected of them and they would feel a greater responsibility resting on themselves. A large percentage of our school directors are farmers and cannot give to the school the time and attention it demands. If they were paid a salary they could afford to hire someone to do the chores and the less important work on the farm, who might not be qualified to give a wise and intelligent opinion on some great question at stake at the regular school board meeting. Also more time could be devoted to visiting the schools, investigating their present condition and discovering their needs. A school director as a visitor at school is rarely seen.

The solution of the country school problem is to be found only in partial or total centralization. Many of our rural schools have from eight to ten pupils,



and this small number needs the same time, attention and school appliances as the school of thirty or forty pupils. It also needs just as good a building, just as much fuel and just as competent a teacher; hence the present system of school management places a great and unnecessary expense on the township. By the system of consolidation, the pupils from all parts of the township would be gathered, conveyed in comfortable vehicles fitted up for their own accommodation, entrusted to a trusty driver who is responsible for their conduct from the time they leave their parents till they are given to the teacher's charge, and taken to a school in the central part of the township. Where this is not convenient several buildings could be erected at suitable points. Many are the advantages in this plan to parents, teachers and pupils; pupils would learn early the habits of promptness and punctuality; the percentage of attendance would be greatly increased; no quarreling or profane language would be heard, which is so common among children while going to and from school. The children would have the advantages of better school houses, well lighted, heated and ventilated; pupils could be better classified and graded; the country children would have the same privileges for obtaining an education as the boys and girls in the towns and cities, because centralization would necessitate the township high school for the accommodation of those who have finished the common branches, thus giving many a child an opportunity for a high school education which in many townships he might never have under the present plan. The high school would necessitate supervision, but this is not a novel idea as it has been tried in many townships throughout the state, it has been weighed in the balance and not found wanting. One person could teach the high school and superintend the other schools if they were centralized and in this way save one man's salary. By the system of centralization the teachers would have fewer classes, therefore they could give more time and attention to each class, thus making the pupils' progress much more rapid than it could be with three times as many classes and only one-sixth as many pupils; fewer teachers would be required, better wages could be paid and better teachers might be secured. Consolidation has proved a success where the distance to the school has not exceeded three miles and the people have not been too conservative to adopt it simply because it was something new.

The course of study is of vast importance, its object being to fit our boys and girls for living. The higher function of education is to fit mind and soul for a life in which things material are subordinate to things spiritual and eternal. It is said the school system of Germany is the best in the world, because it is adapted to meet the wants of the different classes of people. According to our system the future blacksmith, miner, farmer, teacher, lawyer and senator receive the same instruction which is neither a compromise adapted as far as possible to both high and low, nor does it meet the wants of the great majority.

The subjects of beauty, cleanliness and neatness cannot be too strongly emphasized, we readily admit, but in the country there is no one to care for the lawn but the teacher. There are no paved streets to and from the school house, but in rainy weather we have a mud road, and what is still worse no door mats or scrapers, hence the mud is carried into the school room and left on the floor; and the most unpleasant part is that the teacher must remove it himself or pay some one from his own scant earnings for having it done, as no janitor is provided. The school library usually consists of a good dictionary unless the teacher furnishes his own books or devises some plan for securing a library. Where these tasks devolve largely on the teacher or his purse, they present themselves in a different aspect from that which they present to the city teachers. No more can be done under the present circumstances, but the time is speedily

coming when a change will be made for the better. Where a good school system is established we all agree that the teacher is the most important factor of the school; his moral influence should be more carefully considered than his intellectual qualifications; no amount of education alone can make a good teacher. The great work of the master is to teach the pupils to teach themselves, and the time has come when teaching which does not bring out the physical, moral, mental and spiritual nature of man, is incomplete. Instead of looking upon child life as a piece of marble to be hammered, cherished and polished into its proper shape, it should be regarded as a growth, depending upon its environment. This little plant has its roots firmly set in the soil of circumstances, and possesses certain tendencies which must be checked and subdued, others which must be fostered and cultivated; if the development of the plant is begun at a very early age and the soil kept rich with high ideals the growth will be a natural instead of a forced one, a little pruning now and then is all that will be needed to make it a hardy and useful plant. The highest quality in a teacher is a love for children. When the teacher awakens to the full realization of the responsibility resting upon him, he at once asks himself, not "What shall I do to make myself popular among the children, to please the children most, or to win the esteem of the school board," but "In what way can I do each child the greatest amount of good?"

Since young minds are so easily molded for good or evil, they need a model worthy of imitation, which holds before them such high ideals that they will crush all in the child's mind that is base. It is true the home training is not always favorable for that of the school, but if every effort is used to bring it nearer to perfection, it surely cannot help being reflected in the home and will in turn be again reflected in the school. There are few pupils that cannot be reached, for the child that is shrewd enough to be bad is certainly clever enough to be good, if the right chord in his nature is touched, and should there be one that cannot be reached, would it not be better to have him expelled than to taint the lives of thirty or forty good children? Each pupil should be made to feel that he is a representative of the school and that he is in a measure responsible for what it is. While the teacher should be kind he must also be firm in enforcing any rules essential to good government.

The noblest work of the teacher is to train the boys and girls to cherish those tendencies which lead to industry and strength of character, to enable them, if possible, to appreciate that which contains a lofty idea and which speaks a noble deed; to teach them so to think and act that they may become useful men and women, defending all that is noble and worthy. The old-fashioned school was one for imparting information, where books were the authorities, but with the dawn of the new education the proper sources of knowledge are not books but life, experience, personal thinking, feeling and acting. Books merely fill up the gaps, correcting what is inaccurate and extending much that is incomplete.

If we could lift the veil that hangs over the future and look into the schools of thirty years hence, we should see that a great change had taken place. The little red school house on the hill which so nobly filled its purpose will then be a thing of the past. It, like the sickle and the cradle, the flail and the horse power will be laid aside, only to be held dear in memory. The little white school house in the valley will be replaced by a central building containing from four to ten rooms, in which all the children of the township will be gathered in nature's garden; surely an ideal school ground, for nature contributes to the child's mind the most lasting impressions. God made the country, man made the town. Here the children can tune their hearts to the singing of the birds and the rippling of the brooks. The beauty and symmetry of the flowers will

give to them facts and images more lasting than any botany; the voice of the rocks will give to them a history of the formation of the world in clearer language than that contained in any geology. In the midst of such surroundings and freedom from city vices, the country schools will not only equal but surpass the schools in the cities. The country school then will be controlled by three or five directors elected at large something in the manner of the township trustees; the children will make going to school a business, instead of going only when it is most convenient; the high school will be of such a grade that the boys and girls on leaving it will be prepared to enter any college in the state; every township will then have supervision; teachers will be chosen for their fitness for the positions they are to fill; they will be men and women whose minds have been broadened by an education that will enable them to understand child life and develop it according to nature's plan. They should also be willing to make sacrifices for the ennobling of the race. Our teachers in the future should be Christian men and women, inspired by the teacher of teachers who spake as never man spake. Then will the "country school problem" be solved, with centralization and the united and persistent efforts of citizens and school boards, parents, pupils and teachers. All these advantages will tend to a condition of education for our rural schools, which will more than atone for the deficiencies in the past.

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### THE BOXWELL LAW AND ITS ADVANTAGES.

By F. J. BECK, Napoleon, O.

[Read at the Farmers' Institute held at Deshler, Henry County, January 5 and 6, 1900.]

The public high school has become recognized and realized as a necessary factor of our system of free education. It is an institution of comparatively recent growth, but it has won its way in the face of opposition until every city and village and many country districts now support a high school. Be it remembered that it is not a generation ago that the high schools of this state were in great danger. The legislators had the subject under deep consideration; the great question was, "Shall we educate beyond the common branches at the expense of the state?" Two mighty forces were at work, one saying, "Yes, by all means," and the other saying, "By no manner of means." But, thank fortune, the better judgment prevailed and the high schools were made, we hope, a permanent part of the system of education.

Although the high school is general in city and village and common in the country we should not rest on our oars and believe all to be well; for the pessimists—at least we hope they are pessimists—tell us that the high schools are not safe even now. They tell us that the old feeling is rife, yet suppressed, and the overburdened taxpayers, those of them who term higher education a luxury and those who are too doleful or indifferent to take advantage of higher education, are all against the secondary or high school and are awaiting an opportunity in the legislature to relegate them to oblivion and term them relics of the past. The watchword of the pessimists is, "Look well to the legislators and the sentiment of the people." But where there is a positive there is always a negative influence, hence the optimists, or the always hopeful, are expecting to see—and why not?—a township high school in each township of the state where advanced pupils can reap the same advantages that advanced pupils do in the city and village districts. The fact that they are scattered over a little more territory should not debar them from the same privileges that their town cousins enjoy.

The optimists' watchword is, "Look well to the legislators and the *educated* sentiment of the people."

Seeing the disadvantages of the advanced pupils of the country districts and the overcrowded condition of the schools, together with the ungraded system of said schools, Hon. A. Boxwell, of Warren county, Ohio, introduced a bill in the state legislature some ten years ago which provides for graduation of advanced pupils from the common schools of sub-districts and special districts. The Boxwell law is simple and plain in its reading and interpretation. It is easy to execute, and is well intended by its author, but like most laws it needs two or three amendments or a great deal of good common sense in its application; both of these would make the law still better. The Boxwell law provides that the county school examiners of each county shall hold two examinations each year. Said examinations shall cover the common school branches and at said examinations the advanced pupils of the various subdistricts and special districts of the county may attend, and if they pass a creditable examination in said common school branches they are admitted to any high school in the county. The same privilege is extended to pupils of adjoining counties if the applicants wish to attend high school in said adjoining county or counties. And the tuition of such pupils as may attend any village or city high school of the county *may* be paid by the board of education of the special or township district in which such pupils may reside. Of course, all this graduation is attended with the proper commencement exercises — two — both township and county commencement, which is only a secondary part of the law.

As said before, most laws are imperfect in some way or another, so it is with the Boxwell law. We think that the law should be amended in three particulars: First, in reference to the paying of tuition by boards of education; the law says that boards of education *may* pay the tuition of a pupil who attends a high school other than in his own township or district; the word "*may*" should be made to read "*shall*." If so amended it would greatly increase the usefulness and advantages of said law, for we know that the pupils have been checked on account of boards of education refusing to pay the necessary tuition, when perhaps the parents were unable to do so, and thereby working a hardship both to the state and the pupils whose interests were at stake.\* Second: The pupil should not be given the choice of the school which he is to attend. This should be under the control of the board, which in this case should act as a parent or guardian concerning the interest of the child. Third: It would be well to have the questions prepared by the state school commissioner or the state examiners in order to make uniformity in the admission of pupils to high schools throughout the state. Not that the county examiners are not qualified for the work, but simply to make the entrance uniform and regular all over the state.

The general advantages of the Boxwell law when fully realized are four, it is an advantage to the pupil, to the district, to society, and to the state. It is a benefit to the pupil for it gives him a broader education and thereby gives him more power and interest in the great drama of life. It is a benefit to the district for it lessens its responsibility in higher education and it can in return strengthen its primary education. It is a benefit to society for it elevates it and puts it on a higher educational plane. It is a benefit to the state for it broadens and

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\* This portion of the law was amended by an act of the General Assembly, passed March 7, 1900, to read, "the tuition of such applicant *shall* be paid by the board of education of the township *or the special district* in which such applicant resides. *Provided that there is no such high school maintained and supported by the township or special district in which such pupil resides.*" The italicised words show the changes.

enlarges the scope and responsibility of citizenship and character, which is the whole aim and purpose of an education.

There are as many special benefits, perhaps even more than general benefits or advantages, to be derived from the Boxwell law:

*First*—It remedies to a certain extent the congested state of affairs in most schools. Most teachers in the country districts have too many classes to hear daily, and if the upper grade is cut off it gives them more time to center on the primary grades and advance them to their proper proportions, which is the foundation stone of all higher education.

*Second*—It lessens the number of pupils in the various school districts and enhances the discipline of the school, which is so very necessary in many of our schools today. "Well governed in growth is good government in manhood."

*Third*—It encourages more systematic work on the part of the teacher, it leads to a better classification of pupils and it leads to the adoption of courses of study by boards of education. It is difficult to estimate the value of a good classification of pupils. It is said that in Washington county, when it became known that an examination of pupils would be held in April, the class in physiology increased from four to sixteen. A wonderful increase, and all brought about, as some would say, by a false stimulus. In other places, boys who had wished to spend all their time in "ciphering" changed their minds and paid some attention to English grammar. So the examination of a few pupils often, and the hope of being successful in examination, may lead to the instruction of hundreds, perhaps thousands.

*Fourth*—It gives the pupil special advantages to enlarge upon his studies, which within itself stimulates him to a higher and better work. He finds it very necessary to pass through certain gradations of work in order to reach his highest aim, graduation, which is a public recognition of his ability to do a certain task in a commendable way. Pupils can run better when they see a goal before them.

And now in conclusion let me say that I sincerely believe the Boxwell law has worked to the advantage of education very materially in encouraging many youths to take advantage of high school instruction; fifty-seven thousand children are enrolled in the high schools of the state; over six thousand of them in township high schools. Let us believe with Herbert Spencer that the essential function of education is to prepare man for complete living—"the right ruling of conduct under all circumstances." It is evident that it sets up a more comprehensive aim for the school than even civilization, for complete living means the right doing of all the obligations and duties that rise from man's relations to himself, to his fellows, to society, to the state, and to God. To live completely is to fulfill the object of human existence. Another theory of education announces that the ultimate end of the school is the fitting of pupils for the civilization into which they are born, and civilization largely determines the habits and customs of men, their industries and vocations, their civil and political duties, and even their religious faith, and therefore education should be a preparation for its duties and obligations. If all this be true, and we sincerely believe it is, let us all lend a hand to that institution, the school, that makes good citizenship, good men and women, and above all good moral character, and never cease in our efforts until higher education becomes universal. Again, the highest work of this generation, of every Christian citizen and parent, is to equip richly the rising generation for its coming duties, for the glory of the individual, the state and society. Let the honest tiller of the soil never cease in his efforts and energies toward higher education until that brick high school is erected in the center of his township, which will elevate the value of life socially, religiously and financially, and then will the farm boy, as he has in the past, but in a better and higher degree in the future, control and shape the destinies of this nation.

## POSTAL SAVINGS BANKS.

By J. H. RHODES, Clyde, O.

[Read at the Farmers' Institute held at Clyde, Sandusky County, January 17 and 18, 1900.]

Savings banks are no new thing to the people of this country. They are usually connected with the ordinary incorporated bank and form a separate or distinct department of it. The bank will receive deposits in that department and allow a rate of interest on all sums allowed to remain not less than a certain specified time. The purpose of this, on the part of the depositor at least, is to lay by his small earnings and accumulations in a safe place where they will be available for use at any time he may need them, but in many instances these savings banks, like many other corporations, have failed and the hard earnings and small savings of a year or a lifetime have been lost; therefore, a widespread distrust exists in the minds of many people as to the wisdom or safety in the use of savings banks.

But if there were or could be a savings bank organized where the small earnings and savings of the people could be deposited, on which a low rate of interest would be allowed, with easy and convenient means of withdrawal and transfer and where the depositor would not only be, but feel, absolutely safe, who doubts but that these institutions would increase in number and the deposits would be augmented by a very large percentage. Such an institution would be the postal savings bank. Being a part of the postoffice department, it would be under the immediate control of the general government and as safe and sound as any other of its departments. It could be established at and in connection with all money-order postoffices and thus become convenient and at once accessible to the whole body of the people, a facility and opportunity not furnished by savings banks as they exist today.

The advantages and benefits that would accrue to the people may be noted:

*First*—It would furnish absolute security against loss by failure of the bank—absolutely as safe as a government bond.

*Second*—It would give every convenience for making deposits and withdrawals. Deposits could be made at any postal savings bank wherever the depositor happened to be at the time he wished to make a deposit, and he could withdraw at any time or place other than where deposited on presentation of the proper voucher or statement—a convenience not now furnished by the ordinary savings bank.

*Third*—It would develop and encourage habits of thrift and economy and thus lessen poverty, temporary want and loss.

*Fourth*—It would give an opportunity to save and deposit in absolute safety in places where no other savings banks exist.

*Fifth*—It would discourage reckless and useless expenditure. When one has once opened a savings account he not only puts his money out of the reach of temptation to spend it, but desires to add to his deposit instead of keeping it in his pocket where it is so easily reached and spent.

*Sixth*—Postal savings banks so convenient of access and connected with the postoffice would be visited frequently and habitually by the young and untrained in business knowledge and experience, who, in this way, would become accustomed to business habits and learn the use and value of money. Nothing will so wake up and interest a boy as to make him the proprietor of a business, be it never so small.

Advantages and benefits would also accrue to the general government and

to the nation; some of them may be mentioned. It is claimed and is no doubt true that some of our money, perhaps no small amount of it, goes abroad and finds its way into postal savings banks of foreign governments, because they have this safe mode of deposit while we have not; again, much of the money brought into our country by foreigners, who expect to return, is carried back with them that would find its way into postal savings banks if we had them.

Again, the money thus deposited would save the government the necessity of borrowing a good share of the money for which our government's bonds are issued, a large share of which is held by foreign syndicates and capitalists who, in the end, drain the country by taking out more money than they brought in, by just the amount of interest that accrues.

Another and probably the most important result to be attained would be the increased loyalty and patriotism of the people. It naturally and necessarily follows that the greater the number of depositors becomes, the more our people have their money invested in the government and thus become its creditors, the more they will feel interested in its stability and welfare and the more they would sacrifice for its existence and perpetuity; and along the same line the government should issue all the money direct to the people, whether of gold, silver or paper; then, with these two great measures in operation, no matter whether one had his money deposited with the government or the government had its money in his pocket, in either case or both, every such citizen would at once be loyal and a ready defender of the government whose money was the compensation for his toil and effort.

Let us now consider what the objections would be to postal savings banks or rather from whom or what classes of persons the opposition would come. It is said that the wholesale confectioners would oppose the law establishing such banks, because children and others would spend less money for candies if they were to become patrons of postal savings banks. Nor would it be difficult to determine the probable attitude of the whiskey and beer trusts on this question. These interests would not take kindly to such habits of sobriety, economy and thrift as would be formed by their patrons, who would lay by their earnings in this way instead of spending them for beer and whiskey. The whole tobacco interest would assume the same attitude of opposition, because a less number of boys and young men would buy and use the poisonous cigarette and many others would discontinue the use of the "filthy weed."

With postal savings banks established and the benefits resulting to the people, the next step would be a postal telegraph system, also under the control of the general government, and when we remember the millions and millions that have been and are being amassed by the telegraph corporations in this country, by the exorbitant charges made for their service, who can doubt but by this great utility, justly and economically conducted as it would be by the government, just as our postal system is conducted, telegrams could and would be sent for one-half or less than what they cost now. All this would be anticipated and, of course, opposition quiet perhaps but determined and persistent would be sure to come from this source.

But the most formidable opposition can be expected to come from the banks because many of the postal savings banks, when established, would come in competition with the organized banks in the way of receiving deposits and selling exchange. This, as everybody knows, is no little source of income and profit to them. This opposition would be well organized. They and all the enemies of the postal savings banks would say that they oppose the system because they do not want the government to engage in this or any other business that will in any manner interfere with their business—that of receiving deposits and selling exchange—the same opposition that they and other corporations make to any and

every proposed government reform. Of course they would object, and demand that the government should keep out of the banking business. In some aspects of the subject the people might more properly demand that the banks should keep out of the government business, especially when that business conducted by the government makes for the benefit of all the people while the same business conducted by the banks or other corporations inures only to advantage of the stockholders. No wholesale attack is here intended to be made upon the banks; indeed, under our present financial system they are indispensable and under any system they would no doubt be necessary. It may be said in this connection, however, that some of the privileges now accorded to them belong to and should be exercised by the general government, and the benefits and profits flowing therefrom belong to and should inure to the benefit of the whole people, accomplishing, in some degree, the purpose for which governments are instituted among men.

Then, too, the charge of paternalism would be made by all the classes who for any reason are opposed to postal savings banks. There would be no more paternalism in this than there is in our present postal system, and who complains of that? It is a well known and universally conceded fact that our postal system is not excelled, if it is equaled by any other system, in its convenience and efficiency, conferring as it does more benefits on the people in proportion to its cost than any other service rendered by the government. If this is paternalism let the people have it, the more the better.

Such an institution can be established only by an act of Congress and whenever the measure comes up, as it is bound to come sooner or later, there will be plenty of opposition to it, not of a noisy kind, but no less obstructive on that account. Obstacles will be thrown in the way of the progress of the bill from start to finish, yet there will not be much said against it by members of Congress because that would make them unpopular with their constituents and so hazard their chances of a re-election; yet there will be present rich and well paid lobbies who will use their powerful influence against the measure.

As already hinted, we have no postal savings banks in this country, but they are not new or untried; notwithstanding we boast of the best form of government known among men, postal savings banks have been established and thoroughly tested in many of the foreign countries. Great Britain was the first to establish the system, in 1861, and has since then introduced it in most of her colonies with great success. The act putting the system into operation was championed by Mr. Gladstone, then chancellor of the exchequer.

Lewins in his "History of Savings Banks" says of the postal savings banks of Great Britain: "Next perhaps to the repeal of the corn law this is the greatest boon ever conferred on the working classes of the country; and next to the scheme of penny postage itself, the scheme of postoffice banks is the greatest and most important work ever undertaken by the government for the benefit of the nation. \* \* \* The success of the postoffice banks has been of the most complete kind."

Postal savings banks were established in Belgium in 1870, in France in 1881, and in the Netherlands the same year; in Italy in 1875, in Austria and Sweden in 1883, and in Hungary in 1886. The system is also in operation in Japan.

Why these old governments should have preceded our own in adopting this great measure of reform may at least be conjectured. The wealth of these countries is owned and controlled by the comparative few while the masses are mostly laborers almost wholly dependant upon the wealth owners for employment, and hence much crime and pauperism abound and these are expensive, taxing even the wealth of the country beyond what is it willing to bear. To avoid this burden or lighten it this measure was adopted to teach and encourage the masses



to live in a more frugal manner, to practice a more rigid economy, the better to save their small earnings and so diminish pauperism and crime. Why this reform has not been adopted in our own country can also be conjectured. While tending in the same direction we have not, as a people, reached the conditions above described.

If we can let us avoid these conditions. Establish postal savings banks. Give the people other great reforms along the same line and so provide the opportunity for them to make themselves comfortable, contented and happy and, at the same time, create a loyalty and patriotism that will defend and preserve this country of ours for ages yet to come.

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### ROAD IMPROVEMENT.

By B. W. BIXLER, Krumroy, O.

[Read at the Farmers' Institute held at North Springfield, Summit County, February 5 and 6, 1900.]

This subject is one that should challenge the attention of every enterprising citizen. Writers tell us that roads have always been regarded as accurate tests of the degree of civilization existing in a country; we would not like to admit that we are not fully civilized, and yet, a man need not travel many miles to find that our country roads are not what they should be. This is not due altogether to neglect, nor so much to lack of material, but more perhaps to the manner in which the work is performed. The work is done too much in a "crazy quilt" fashion; here a patch and there a patch, and every patch of different material; sod, clay, sand and whatever is most convenient, is dumped on the roads. Supervisors are very often chosen, not on account of their fitness for the work, but for various other reasons, too numerous to mention here.

When we consider the magnitude of the wonderful works of man in the past one hundred years, we wonder why the art of road building has not kept pace with other improvements. The writer can well remember the time of the "slow plodding ox" and travel on the "raging canal," but instead of these we have today the lightning express, and the automobile or horseless carriage to gratify the wishes of a fast age. In comparison to these and many other advancements, I ask, is there yet one who will not say that our system of road building is, in part at least, a relic of the dark ages, and should go into obscurity with the evening of the nineteenth century; and as the morning sun of the twentieth century will soon shine upon us, we should go forth striving to so improve upon our past mode of life, that in all things we may add to our comfort and happiness. "But," says one, "we can not allow ourselves to be taxed in addition to a now burdensome tax, that the roads may be improved."

Let us consider a few facts and figures and thereby determine whether we are willing to continue the present reckless and expensive system, for when supervisors neglect to work on the road till late in the fall, as is the case very often, we say that recklessness is very apparent, for roads worked thus late in the season are surely made worse instead of better. We said the present system was expensive, let us see if this be true. We have in this township about five hundred voters: approximately about two-thirds of these persons, or three hundred and thirty-four people, have to work poll tax, equal to two dollars and a half each, which makes an amount of eight hundred and thirty-five dollars, or its equivalent in labor. Our road tax which is levied by the county commissioners is between

eight hundred and nine hundred dollars—we will call it eight hundred; we have in this township nineteen road districts, hence nineteen supervisors to pay; we purchase some gravel, sewer pipe, and road plank, making the last three items cost about six hundred dollars. We have, then, the poll tax eight hundred and thirty-five dollars, road tax eight hundred, supervisors, etc., six hundred, total two thousand two hundred and thirty-five dollars. What is true of this township is approximately true of all the rest in the state. Think for a moment of the amount of money and labor expended, sixteen townships in a county, eighty-eight counties in the state, making a total outlay in the state of three million, one hundred and forty-six thousand, eight hundred and eighty dollars a year. May we not then consistently ask, shall this system continue as the years go by, or will we learn to manage our finances better and at the same time have better road facilities, by expending this immense sum of money, or labor if you please (time is money), more judiciously?

The first step to be taken, in my judgment, is to select a proper and feasible route to the county seat; the aim should be to accommodate as many as is consistent with the practicability of said route. This route, then, should receive first attention in the way of permanent improvement. The roadbed should be properly graded before any other improvements are attempted. The wash of the roads which accumulates along the sides or in the gutter, is absolutely worthless for road purposes, and should be carted out on adjacent fields as a fertilizer. Places where winter springs abound should receive strict attention in the way of being thoroughly underdrained. I believe that tile draining, springy, heavy clay, or soggy roads should have more than a passing thought, from the fact that not only in word but in deed, it becomes the foundation of good roads. This having been done, in this township where good gravel is so abundant, it should by all means be utilized, and not sparingly, but about three loads should be put to a place, two loads side by side and one on top; this will form a lasting bed and leave it crown-shaped enough to drain the water readily to the sides. Townships that have no adequate supply of gravel should use crushed stone or some other good substitute. While it is a great advantage to every farmer to have a good set of manure boards, even for his own benefit, I take the liberty here to say, that every one ordered out by the supervisor to haul gravel should come with his wagon so adjusted that a cubic yard of dirt could be moved on each and every load. Two by four inches by ten feet pine stuff should be used for the bottom, with two by twelve inches by ten feet for the sides, two end pieces two by twelve inches and long enough to reach from one side board to the other, with cleats bolted to the side boards six inches from each end, so as to retain the end pieces and sides in an upright position. The side and bottom pieces should be sloped so as to form a good hand hold and prevent thereby any accident to the fingers or hands in unloading and at the same time facilitate the work and keep an even temper throughout the day. If these suggestions were heeded you would be surprised as to the amount of gravel, four, five or six teams would move in a day.

The saying, "What is worth doing at all is worth doing well," should be not only the motto of the supervisor, but of every one that performs labor on the road. It is agreed that man's social instincts must be favored and cultivated if he is to keep up with the advancement of the times; bad roads interfere most seriously with society, education, and religion, and for this reason if for no other, it will pay the people in hard cash to repair the roads or build new ones. Among other improvements that follow fast upon the improvement of country roads, is the rural free mail delivery. This with the increased facilities for traveling and transportation and the increased value of lands, will certainly repay the trouble and expense in road building.

The cost of improved roads is the mountain in the way of realization, but

this mountain would become a molehill if approached fearlessly. If the present generation would make up its mind to bear part of the cost and enjoy the benefits the difficulty would disappear. The improvement must come sooner or later, and if the farm does not pay part of the cost during the father's lifetime, it must pay it during the son's lifetime and ownership. And, further, to accomplish much along this line, I insist that there must be co-operation and good efficient work in all departments, from the commissioners, trustees and supervisors to the individual. If we could secure as prompt performance of the duties imposed by our road laws, by each individual that has two days' work, or taxes to be paid in labor, as a good farmer or a careful business man gives his private business, the roads of our country could be greatly improved without levying any more taxes than the average of the years past.

The commissioners, trustees and supervisors, each, as a rule, after the necessary repairs in the way of cleaning out ditches and drains, mending culverts and bridges, filling up holes in the roadbed, rounding up roads, etc., make some permanent improvements, such as cutting down the high and filling in the low places, moderating heavy grades, tile draining or macadamizing some bad pieces of road. Let the commissioners make their improvements where most necessary to accommodate the travel of the county, the trustees make theirs where it will best accommodate the travel of the township, and the supervisors make theirs where it will best suit the convenience of their districts. Much depends on the supervisors as they have full control of the two days' work and the taxes paid in labor. It is not so easy to get value received out of the labor fund as out of the cash, and for this reason we should see that the right men fill the office of supervisor, men who know how to do road work, who are not afraid to do it, and who will not receipt for a day's work until they know that an honest day's work has been done.

The supervisor should be vigilant and exercise care during his entire term of office; if it should be wet and rainy after the work has been done, and the roads become cut up and rough, they should be smoothed down again with the six-horse machine, and, by the way, that is about all that machine is good for. Care should be taken not to leave any depressions where water will accumulate and cause mud holes. No loose stone should be left on top of the road to mix with the mud in winter, and shake vehicles to pieces in the summer.

In conclusion I will say that the law provides an ample levy, hence it is not so much the fault of the law as the fault of the people, let the people be awakened to a conscientious discharge of the duties imposed upon them by the law, and our taxes need not be burdensome to greatly improve our roads, but if each one tries to see how little he can do to discharge the obligation, you might increase the taxes to the full extent and the improvements would be very slow.

Do you say that to accomplish all this will require years of endeavor and no end of hard work? So it will, but "Rome was not built in a day, nor was success in anything ever achieved without great labor."

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## COUNTRY ROADS.

By O. B. THOMPSON, Jersey, O.

[Read at the Farmers' Institute held at Utica, Licking County, December 16 and 17, 1899.]

We shall consider the roadway as the land used for public travel and generally bounded by fences, the grade as the degree of inclination of the traveled part of the roadway, and generally expressed in feet and inches to the mile. We

give the name road-metal to such materials as wood, gravel, stone, or iron, used to make the surface of the road, and the name subgrade to the part directly beneath the road-metal.

We shall not attempt any discussion as to whether we have the best laws for laying out roads and working or maintaining them, as to whether the necessary bridges are all built on the best and most durable plans, as to whether the proper grades are all established, the proper side ditches all made and kept open, the weeds cut, etc.

We admit that during seven or eight months of the year our dirt roads are reasonably good, also that the ordinary clay road, when smooth and of the proper moisture, is the best of all roads, the most pleasant for man and beast. The trouble is that it has been found impossible to keep our country roads in this condition during the whole year.

The object of this paper is to study some of the difficulties in the way of having good roads, and some of the methods in common use to overcome those difficulties, also to suggest a remedy which seems to us so important that it should be adopted and considered as the very foundation of any practical, good plan for a country road, and still further to urge those in authority to test various plans on small stretches of a few rods only, enough to determine the very best plan for any given locality, before spending large amounts of money and labor on what so often prove to be disastrous failures, and lastly to offer suggestions as to some methods of paying for good roads, built upon such plans as the test of experience shall cause to be adopted. Before we begin, we imagine we hear some one saying, "How about the cost?" This is a pertinent question, and as a partial reply, please tell us how much our present roads have cost. We have seen men leave good horses in the stable and walk two or three miles on account of the mud, have seen two good horses tugging away at an empty wagon, working harder than they would to draw a ton on good roads. As an example, suppose our Homer friends can drive to Utica for the train in half an hour with good roads, while with muddy roads it requires an hour to travel the same distance. Thus time and distance are practically doubled, and perhaps more than that if a load of coal or merchandise or corn or hay is to be hauled. We are aware that a generous amount of money has been spent on the road between Utica and Homer, and yet this year has required another large outlay to keep it in repair. Would it not have been better, before trying to build a road on so large a scale, to have tested the plan on some small portion, and learn by actual experience whether the plan adopted would make a road, good enough and durable enough to justify the expenditure of time and money? The trouble with this road to Homer is not very different from what others have experienced. There are two turnpikes in Franklin county, just over the Licking county line, built on the assessment plan, heavily ballasted with gravel, and neither one will last as a passably good road, during the ten years required to pay the cost of construction. While upon the subject of cost, we should not overlook the amount of money actually expended upon our roads, and fortunately we can approximate this much more easily than the cost of plunging through the mud or over the hubs one-third of the year. As a matter of statistical information the auditor of Licking county kindly furnished a statement of the amount of money expended each year in Burlington and Washington townships for the last ten years exclusive of poll tax and bridgework. The figures are as follows:

	Burlington.	Washington.
1890 .....	\$ 748 00	\$ 696 00
1891 .....	581 00	553 00
1892 .....	1,160 00	528 00
1893 .....	1,470 00	553 00

1894 .....	867 00	498 00
1895 .....	2,100 00	763 00
1896 .....	1,481 00	477 00
1897 .....	1,434 00	485 00
1898 .....	1,791 00	487 00
1899 .....	1,920 00	492 00
Total .....	\$13,552 00	\$ 5,532 00

Now, with all this expenditure of money and muscle how much better are the roads this year than ten years ago? How do the outlay and benefits compare? Does it not seem there must be a defect somewhere? Let us try to determine if possible what the defect is, and then we will be better prepared to find a remedy. The limits of this paper forbid the discussion of all the difficulties in the way of having good roads, in fact we only expect to consider a few of them. We suggest that the first great difficulty, then, is water, and the second is the same thing in the form of frost or ice, or rather we will attempt to show that this molecular change by which the water in the road-metal and subgrade becomes ice is the arch enemy of good roads, and does more damage than all other causes combined. It is a natural law that heat expands and cold contracts all bodies, with the notable exception that water in freezing increases its volume about one-ninth part, in other words nine cubic inches of water form ten cubic inches of ice. This increase in volume always occurs and with irresistible force. The noted Florentine experiment is pertinent here. A brass globe nine inches in diameter had one cubic inch of water confined in its center. The globe was allowed to freeze, when it was found that the little cubic inch of water had exerted a force computed at many thousand tons, and had burst the brass globe nine inches in diameter. Now when soil becomes saturated with water and freezes, every minute atom of soil is forced away from every other minute atom of soil, or in other words the soil is disintegrated, made finer than the finest flour. This action of frost is of incalculable benefit to the farmer in his fields, but disastrous to the roads.

You may cover the road with gravel or stone six inches or a foot deep, you may pound and roll the subgrade and road-metal in the most approved macadam or telford styles, and if water saturates the road-metal or subgrade and one hard freeze converts this water into ice the whole road-bed is lifted in this proportion of one to nine, and the whole mass is disintegrated as far down as the frost reaches. The thawing process comes irregularly, some places in the subgrade are wetter than others, some places settle faster than others, and the whole mass, roadbed, road-metal and subgrade is in a state of disintegration. This thawing process commences on the surface as well as underneath, and the places in the subgrade which thaw and settle first allow the road-metal to sink down, and your beautiful stone road becomes very irregular in its surface, the hollow places holding water, which with succeeding frosts assist the wheels to form and deepen the ruts, and the surface becomes a slush. Is it any wonder that the gravel disappears, some of it forced down into the mud below, some of it disintegrated and washed away or blown away as dust, so that in a few years we wonder what has become of the gravel? Mudholes in a stone or graveled road are a good sign of defective drainage.

Perhaps by this time we can agree that the worst enemy of our roads is frost. If so we have another proposition, and we wish to make it very emphatic, that where there is no moisture, the frost will do no damage. This naturally suggests the subject of drainage and we wish to repeat our proposition in another form—that where drainage of the subgrade and roadbed is perfect, frost does

no damage. Is there no way except by drainage to prevent damage? Yes, by shutting the water off entirely. Our city pavements are supposed to be waterproof, the paving blocks vitrified or burned until they will not absorb moisture and the spaces between the blocks rendered impervious to water by the sand and silt forced in by constant use. The streets are slightly rounded so the water is rapidly carried off by the gutters, and if a little does seep through it passes into a stratum of sand and gravel a foot thick, with plenty of drainage, into the sewers below. But of course all this paving means an expense entirely too great to be expended on our country roads.

More of this drainage subject hereafter; just now a few words as to some of the common methods of repairing our roads. The old scraper which dumped the dirt in hills and hollows, the hollows to become mudholes, deeper and deeper as wheel after wheel passed through them is seldom seen now; as a road machine it is nearly obsolete and in its place we have the grader, which seems worse than the other, inasmuch as it is capable of putting so much more loose dirt in the road. We used to be a friend to the grader, but have become convinced that the best way to use it is to leave it in the shed, unless for a few days in the spring it is used to fill up the ruts and make the road smooth for summer use. "Oh! but," says one, "just round the roadbed in the center to carry off the water, and put on gravel and it is all right." Well, sometimes the gravel does not get hauled, and if it does, where has it made a good road for three years? The action of the wheels on top of this beautifully rounded surface and of water and frost underneath soon form ruts, and the water persistently stays in the ruts where it is not wanted, instead of going into the nice side ditches where there is so much room for it. Yes, and the subgrade of loose dirt placed there by the grader either in the spring or fall gives way under the action of frost, and the gravel on which you depended and on which you expended so much labor, disappears, the beautifully rounded roadbed is gradually flattened out and the mud hole, like the man to whom the seven devils returned after they had been cast out, is in a worse case than before. This is no exaggeration: Does such work pay? "But," says another, "there is a better way: just pick the cobblestones from the field, where they are of no use, put them in the middle of the road, cover them with gravel and you have a good road." Let us study the action of frost on this stone pile. If the frost gets under the stones it will lift them, and when the thaw comes, the silt-like, fine material above and on either side of the stones will settle before the stones do, and eventually the stones will be left on top, on a principle similar to that by which frost lifts a head of clover out of the ground. It does seem that if the subgrade could first be properly drained, this plan might be worth a trial, especially if the stones were put through a crusher first.

Some improvements on this plan deserve a passing notice. One uses the grader to throw loose dirt from the side ditches into two parallel lines or rows about five feet apart and, not covering the center of the road, fills the space between the lines with cobble, crushed stone or gravel, the loose dirt acting as a shoulder to prevent the road metal from spreading out. Still in advance of this plan we have the macadam and telford stone roads. The foundation for either system is identical. It should have the same slopes from the center to the sides as the finished road with sufficient shouldering to hold the stone in place at the sides. It is then dampened if necessary and rolled until hard and dry, so that the wheels of a loaded wagon will make no impression on it. Then a course of stone crushed until not too large to pass through a two and one-half inch ring is applied and thoroughly rolled, and enough coarse sand or ground stone applied to fill the spaces and make the foundation course not exceeding four inches in thickness. Upon this foundation is placed the surface material

similar to the foundation excepting that the pieces of crushed stone should not exceed one inch in diameter. The whole is thoroughly rolled, and the interstices filled with sand or stone dust and again rolled. The intention is to make a road-metal impervious to water. The telford is similar to the macadam excepting that the foundation course is composed of stones not exceeding ten inches in length, six inches in width and three inches in thickness. The filling of the interstices, heavy rolling, etc., are the same. One more form is the steel-track wagon road now being tested; two steel rails about eight inches wide and placed about five feet apart so as to carry a wagon. These rails have a flange about one-half inch high on the inner side and steel cross-ties to hold them in position. There is a subgrade of the telford order under each rail about a foot deep and a foot wide. The space between the rails is macadamized. The cost was about one dollar per foot before the price of steel advanced. And yet we find that even these expensive stone roads need constant repairs, and that the worst enemy to contend with is water and frost. This brings up again the subject of drainage. Every writer on the subject of road building, as far as we know, concedes the importance of drainage, and yet none of them have a really successful plan, nothing better than side ditches. Mr. Webber, in "New Roads and Road Lines in the United States," says: "There should be no standing water under the surface of the roadbed to the depth of at least three feet, and there is no word which should be so thoroughly impressed on the minds of all connected with the making of roads as the word *drainage, deep drainage, thorough drainage*." Maurice O. Eldridge, in the Year Book of the United States Department of Agriculture, 1898, says: "Drains should be four feet deep," and "they are easily and cheaply made and will last for ages." We wish he had told us just how to make them, for we feel that this subject of drainage is the important point without which no road, no matter how nicely graded and rolled and macadamized, will last a decade. It might seem that the drainage of a roadbed is an easy matter, perhaps it is to Mr. Eldridge, but experience shows that it is a much more difficult matter than the drainage of a cultivated field. If tile is properly laid in a cultivated field, all the surplus water above and within reach seems to flow into it. Not so with the roadbed which becomes a pasty mass impervious to water, dead soil, as we farmers would call it, through the action of hoofs, wheels, water and frost, until every foot-print and rut holds water like a jug, and the process goes on until the mass is more like a mortar bed than a roadbed and it will do this right over the best laid tile in any clay soil. Men may theorize, this is experience.

It is not enough that good side ditches are kept open, they are necessary to keep any water from the road which might otherwise flow into it from the adjoining land, but side ditches are of little use to take water from the center of the road, no matter how nicely it is rounded off, and even graveled. It is a common sight in the spring of the year to see deep mud, with every rut and foot-print full of water between good, open side ditches, and this water in the traveled road is finally removed by evaporation instead of drainage, a slow process when it freezes every night and rains every other day. Sometimes tile placed below side ditches helps very much, as for instance when the tile cuts off and drains some wet weather spring which would otherwise find its way into the road. Still we have concluded that very little of the water which falls on the roadbed, and which does not run off immediately, ever finds its way to any side ditch or tile placed beside the road. The water simply remains there to be worked over and over into a mud deeper and deeper.

Is this picture overdrawn? Is there no remedy, no way except to await the slow process of evaporation to remove the water from this mud? In truth, we can see no other practical way. This is a case where an ounce of prevention

is worth a pound of cure. Please remember that we started out with the assertion that frost is the great arch enemy of our country roads and that where there is no water frost does no damage, that if all the water which can possibly be removed from the road is removed, the disastrous effect of frost is reduced to a minimum. What plan shall we adopt to remove the greatest possible amount of water from the center of the road, both roadbed and subgrade, before the frost comes? This is the question we must solve to have the best possible roads. Let us repeat, for we wish to make this point very plain, nine cubic inches of water make ten cubic inches of ice. Suppose we succeed in removing nineteen-twentieths of this water before the frost comes, we will have only one-twentieth of the disintegration to contend with.

We have a plan we would like to have tried for draining the center of the road. Suppose we place a drain of four-inch tile three feet deep in the center of the road and give all the grade possible, although, if tile are laid carefully, a descent of one inch in fifty feet will carry all the water. See that the drain has a good outlet, the supervisor has the law on his side when he requires an outlet for side ditches or tile. Fill the ditch with cobblestone, putting a little coarse gravel on top so that it will not be very rough to drive over. A driveway on each side of the tile drain would be preferable, one side covered with gravel or crushed stone for winter use, the other side for a clay road for summer use. Some places, especially where the road is too narrow for two driveways, may be better with the tile drain close to the driveway, and on the lower side so the water will gravitate toward the drain, the drain to be filled with cobblestones as before. If cobblestones are scarce, we would hope to accomplish practically the same result by placing drawholes about twenty feet apart; that is, about five feet to be filled with cobblestones, twenty feet with soil, then five feet with cobblestones, and so on. The ditch should not be filled so full of soil as to prevent the water from running along the surface from one drawhole to another. We all know that tile are liable to fill with sand and silt and thus prevent the passage of the water, unless they are occasionally flushed, that is, filled with water to the utmost extent, to wash out whatever has accumulated, therefore let us lay side branches occasionally from the main tile across to the side ditches, with drawholes of cobblestone in the side ditches, so that when the overflow comes the water may be utilized to keep the tile clear. Some soils may be so wet and springy that two main ditches will be required for sufficient drainage. A much less amount of road-metal will be required where the subgrade is thus drained, and whatever is applied will last many times as long as the same amount of road-metal applied to an undrained road. In short, we will find that drainage pays.

Having described a plan of drainage which we think would prove valuable for most of our clay roads, we would like to suggest in addition a form of road-metal which would prevent the formation of ruts over the tile, and at the same time prevent a great deal of the dust and debris of the road from reaching and clogging the tile. We suggest three plans or rather three modifications of one plan, and all of them are based on this one method of drainage. Suppose then, we have our drain as described, but with the top about eighteen inches wide, as in section shown in the illustration, filled with cobblestone to within six inches of the top and thoroughly rolled, then an inch of sand or just enough to make a solid base for a course of paving blocks set on edge and crosswise the drain. Suppose such blocks are carefully bedded on the sand to form a track nine inches wide and four inches high. To hold these paving blocks in place let us use hardburned brick laid flatwise, so the upper edge of the brick shall be about two inches below the upper edge of the paving blocks; let the top of the paving blocks be about two inches below the bank of the ditch or the surface of the road. The space on top of the bricks between the paving blocks, and the



bank of the ditch should be filled with gravel tamped solid. (See plan 1.) Several other plans may be devised to hold the paving blocks in place if the one described proves insufficient. Estimating digging ditch, per rod, at fifteen cents, tile at twenty cents, cobblestone at seventy-five cents, paving block at sixty cents, brick at thirty cents, and we have a cost of two dollars per rod or in round numbers about seven hundred dollars per mile including labor.

What a splendid track for the bicycle; wheelmen please take notice. What a nice place for the water to run off which falls on the road in a shower, especially when the paving blocks are lower than the surface of the road. Our paving blocks would have a solid foundation extending below effects of frost.

Experience with stone or graveled roads has shown us that some plan to prevent the formation of ruts is very desirable. In our section wagon wheels generally track about five feet apart counting center to center. Suppose we dig another ditch the same distance, say five feet from our tile drain, counting center to center, and let this second ditch be eighteen inches or two feet deep, filled with cobblestone, paving block and hardburned brick just like the tile drain described (see illustration); perhaps some may prefer to make both ditches the same depth and use a double line of tile. This plan will give us a double line of paving block for the wheels, and prevent the formation of ruts. The tread of the wheels may be narrow or wide, the loads may be light or heavy, the vehicles may be few or many without making any perceptible impression on our paving block line. Could a steel rail costing many times as much be any better? We estimate this plan (Plan 2) to cost about twelve hundred dollars per mile.

We have mentioned three agencies which pulverize our road-metal, namely the combined action of frost, wheels and hoofs. We try to prevent the damage by water or frost by careful drainage, and the damage by wheels or ruts by carefully laid lines of paving block, how shall we best prevent the erosive action of this third agency, hoofs? We know of no material better suited to this purpose than crushed limestone, and fortunately the limestone quarries of Ohio are practically inexhaustible. Suppose we fill our ditches to the top with the cobblestone, and lay our paving block as before, and fill and round up the space between the lines of paving block and for a few inches on the outside of them with crushed limestone, or good gravel if limestone can not be had. (Plan 3.) If we figure the limestone at one dollar per cubic yard, and use two yards per rod, it will amount to nearly seven hundred dollars per mile in addition to the cost of plan 2, or about nineteen hundred dollars per mile for a road, protected as far as possible from the ravages of hoofs, wheels and frost. The cost of these items will vary much in different localities. The cut illustrates the plans.

We think that plan 1, simply draining the road, will benefit very many of our country roads and prevent the formation of any deep mud, and that any good road-metal such as good gravel or crushed limestone will last many times as long as it will without the drain. Some of our roads on account of the great amount of travel will require plan 2, while others on account of travel and some peculiarity of soil will require plan 3. You remember the story of the painter who, when pressed for an answer as to what he mixed with his paints, to give them such a peculiar gloss said he mixed them with brains. Doubtless the judicious use of brains will be found useful in deciding just what plan to adopt and how to carry it out, and, after all, we must carefully compare the cost of construction and repairs on the debit side of the column, and the durability and benefits on the credit side before we can certainly decide on any plan. The large cost and short life of some of our turnpikes make us anxious for something better. A turnpike costing one thousand dollars per mile may be more expensive

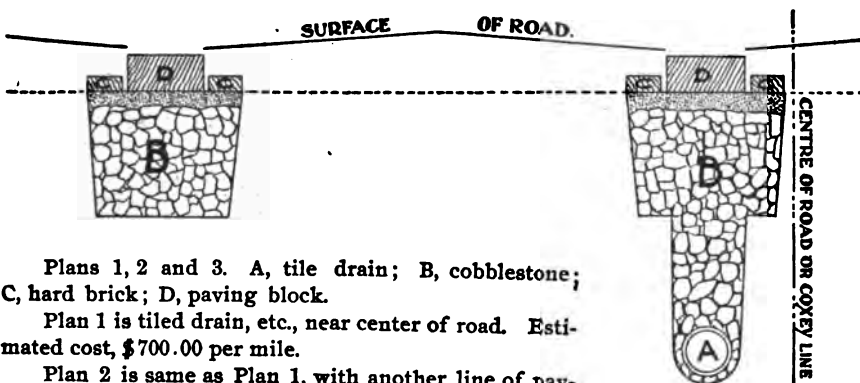
than another costing five times as much. Can we decide on the plan best suited to a given locality without making a test to determine by actual use what plan gives the best results for the least money? Having settled upon the plan it might be possible to build considerable road in each road district without increasing our taxes. If we could build say one-half mile each year so it would be durable we could soon have good roads.

Now as to the cost. We do not think the whole burden should be borne by the farmers, nor that the building of good country roads should be imposed on the cities. Probably a more equitable plan, a golden mean between the two, can be devised, viz., that the state of Ohio should render aid under certain restrictions. A small state tax might be levied upon city and country alike, and all classes and all localities would contribute a share, the benefits of which would be enjoyed by all.

Massachusetts, New York, New Jersey and Connecticut are probably the states which have made the greatest progress in road building. They have levied state highway taxes, and have built roads by some system of state aid. Railroads, canals, rivers, harbors and steamship lines have been lavishly subsidized and the farmer has paid his share and sometimes, we fear, more than his share. Turn about is fair play, and it might be all right to subsidize the farmer just a little in the arduous task of building good roads.

Just another thought concerning the cost of good roads, or rather a help in building them. We do not like to see two thousand criminals in the Ohio Penitentiary working in competition with honest labor, nor does it seem right to shut them up in the idle house, with nothing to do. We have learned that the state of Dakota is working her criminals building country roads. Why could not the state of Ohio do the same thing with a part of her criminals in connection with her immense limestone quarries? We will not dilate on this thought, but will leave it for you to study over.

We must not stop to consider the benefits of good country roads and their important connection with many improvements which seem sure to come whenever the roads are suitable, such as rural free mail delivery and centralization of schools, and we close hoping that if any of you should ever get to studying over the best plans for building good country roads, you will surely remember that the most difficult question is drainage, and the most important question is drainage, for nine cubic inches of water make ten cubic inches of ice.



Plans 1, 2 and 3. A, tile drain; B, cobblestone; C, hard brick; D, paving block.

Plan 1 is tiled drain, etc., near center of road. Estimated cost, \$700.00 per mile.

Plan 2 is same as Plan 1, with another line of paving block, etc., added, about five feet distant. Estimated cost, \$1,200.00 per mile.

Plan 3 is same as Plan 2, excepting that the part above the dotted line is crushed stone. Estimated cost, \$1,900.00 per mile.

## LEAKS ON THE FARM.

By E. N. UNCAPHER, Marion, O.

[Read at the Farmers' Institute held at Marion, Marion County, January 24 and 25, 1900.]

Some the leaks to which I shall call your attention in this short paper may seem trivial and insignificant, but let us remember that old Scotch proverb, "Many a little makes a mickle." We all know, too, that a small leak, if allowed to continue, may sink a great ship, so it is very often the little leaks on the farm which bring financial embarrassment, if not ruin, to many an honest, hard-working farmer. Franklin says that if we will take care of the pennies the dollars will take care of themselves; just so it is with the small and apparently insignificant leaks which we allow to continue from day to day in our work on the farm and in the transaction of our business affairs. It is the little foxes that spoil the vines.

I shall not attempt to tell how to stop all the wastes or remedy all the mistakes which I will mention. Neither will I speak from theory alone, but more particularly from observation and practical experience, believing that few of us are doing as well in our work as we know. Many of the leaks I will mention I am frank to admit are occurring in my own practice, as my neighbors no doubt can truthfully affirm. I must acknowledge that since beginning the preparation of this paper, I have discovered many leaks, both large and small, in connection with my own farming, that I had not before suspected, which in the aggregate would amount to a considerable sum in the course of two or three years. So even if I fail to interest or benefit any one else, I will still consider the attention given to this subject as time well and profitably spent, because it has enabled me to discover some of my own mistakes and shortcomings.

In the first place, I am convinced that some of us keep too much of our land under the plow; by this I mean that we are using too large a proportion of the farm to grow grain and not enough for hay and pasture. By this system it is much more difficult to keep up the fertility of our farms without resorting to commercial fertilizers. Grain raising also brings much extra labor to the farmer and his family in the way of harvesting and threshing, as well as an added expense in the purchase of teams and farm machinery. I believe that in the management of our farms economy demands that we adopt a system which exhausts the natural fertility as little as possible, consequently I think it advisable to keep as much land in grass as possible. The greatest trouble caused by trying to cultivate too much land is that of not being able to do our work at the proper season, being a little behindhand all of the time. There are farmers who begin plowing for corn about the first of May each spring and keep on plowing and planting until time to make clover hay; then, before they are ready for it, wheat harvest is at hand, consequently the corn must be neglected in order to save the clover and wheat, which is more than likely harvested carelessly because of getting too ripe, causing more or less loss as a result. Surely what is worth doing at all is worth doing well on the farm as well as elsewhere.

Another leak, especially on clay farms, results from the ruinous practice of using the cultivated fields for pasture. The most practical way is to set apart a portion of the farm to be used as a permanent pasture. This enables us to dispose of useless fences between different cultivated fields, as well as between different pastures. Many of the best farms of this day have the permanent pasture in as few fields as possible, and the plow land by itself in one or two fields. And in the fields where crops are grown in rotation, no stock is ever allowed to pasture.

This reminds me of another leak which is claiming the attention at present of some of our most progressive farmers, and that is a lack of a proper rotation of crops. It is the practice of many to raise corn and wheat on the same fields for years in succession, then seed to clover and timothy and mow for hay as long as they can get one-half or three-fourths ton per acre. Under this treatment farms, especially clay land, are becoming barren and unproductive; many owners are at last coming to realize their condition and are gradually adopting a shorter rotation. In this matter it is incumbent on every farmer to carefully consider his own case and not that of his neighbor, for economy like charity, to be effectual must begin at home. After a careful consideration of this subject I have come to the conclusion that for me a three-year rotation is the best; corn, wheat and clover; but owing to circumstances at times it is extended to four years; two crops corn, wheat, clover, or if from any cause clover is a failure, a crop of corn, two crops of wheat; or perhaps oats after wheat, then clover. The main thing is to have some system of short rotation which includes clover every third or fourth year. This rotation, once adopted, should not be lightly departed from. It is a mistake to be continually dodging from one crop to another or from one business to another. "Stick to your business," should be the motto of every farmer. In this connection, let me say a word about sowing clover. If you do not grow your own seed, it should be purchased in the fall from a neighbor if possible. Then have a good seeder of some kind, so you will be ready in the spring when the ground is in the proper condition to receive the seed; these things are of more importance than the condition of the moon or the signs of the zodiac. I prefer sowing the last week in March or the first of April, when the ground is honeycombed by freezing, when almost every seed will find a crevice to fall into where it will be covered and take root, enabling it to stand the drouth better. Then a hard rain following will not wash the seed from the high land into the low places, where it is least needed. Some prefer to sow on snow, but the snow melts and leaves the seed on the surface, where the sparrows and other birds will pick it up, and a rain will wash it into bunches. If I cannot sow on a frozen surface I would prefer to wait until the ground gets dry enough to harrow, then run a smoothing harrow over it after it is sown.

After getting a stand of clover it pays well to take care of it. The cause for so many poor meadows, I am convinced, is not altogether in the weather or ravages of grasshoppers, but rather in the fact that much of the new seeding is pastured with horses, cattle and sheep so closely that there is no winter protection, hence it is frozen or heaved out by the action of the frosts, a fault lying altogether in the man who has the power to prevent this great loss by stopping the everlasting pasturing. What would people think if you should turn your stock on your wheat in the fall and pasture it close to the ground? Now, you are doing just as badly when you pasture the clover off short. Treat your clover well and it will treat you well. Remember it is the farmer's friend, it is continually taking in and storing up carbonic acid from the atmosphere and the long tap roots penetrate deeply into the subsoil, bringing up and making available the mineral elements needed for grain crops. Every time you get a good crop of clover you have added to your bank account, and every time you pasture your new seeding you are drawing checks on your account without making deposits sufficient to balance the checks. If this system is carried on for a number of years, land will be so reduced that it will be almost impossible to get a catch of clover; in fact, some soils are in that condition already.

Another leak is the result of the careless manner in which a large majority of the farmers utilize the manure which naturally accumulates on the farm. Stephen Powers said a few years ago, in the Ohio Farmer, "Manure is money, therefore with all thy getting get manure." If manure is money I fear that many of

us are thoughtlessly allowing a small fortune to slip through our fingers each year. To stop this waste we should feed upon the farm all the hay, corn and fodder the farm produces, and use all the straw as an absorbent or for bedding. Probably those who have been selling clover hay at from three to five dollars per ton do not realize that the manurial value of a ton of clover hay is placed at about eight dollars by the chemist, so that they have been disposing of eight dollars worth of fertility for about half its value and have nothing left for their labor in harvesting and marketing the crop. This waste of fertility is going on in various ways on different farms, and until the farmers adopt better methods of saving and applying barnyard and stable manure, it is the height of folly to talk about spending money for commercial fertilizers. A part of this money could more profitably be invested in a good manure spreader which would enable the owner to get much better results, as it would distribute the manure over a greater area than is possible under the usual way of applying it.

Another leak through which the profits are getting away from many farmers who are crying hard times, is in the way they market the produce of the farm. They make a practice of selling hay and grain and often straw and fodder in the raw state, instead of keeping live stock enough as machines to convert these crops into the more concentrated form of dairy products, beef, mutton and pork. The successful farmer has learned that his profit is not alone in producing good crops, but in manufacturing them into a finished product; he has also learned another important lesson, that of selling direct to the consumers as much as is possible, thereby putting the middleman's profit into his own pocket.

Another waste is in the care of farm implements. I have heard that the farther west one goes the more prevalent is the custom of leaving implements out of doors and unsheltered. Do not some of the farmers even in Ohio live a little too far west in this respect? It is a habit which may result in profit to the manufacturer but never to the farmer. Plows and machines are often left where last used, sheltered under trees or left in the barnyard. These things cost money and are often more worn out with decay and rust than by actual use, which results in a considerable loss to the farmer.

Overstocking the farm very often results in loss to the owner. This is the cause of more animals being unprofitable than is usually suspected. Farmers are not so liable to overstock in summer, when stock has the range of the farm, as they are in winter. A pasture may be short and still furnish feed enough to keep stock thriving and growing, but it is an easy matter to neglect animals in winter and soon have them in a rundown and unprofitable condition. The farmer who is overstocked seldom thinks of buying feed to piece out his home supply, which usually falls short late in the winter, but worries through as best he can with what has been grown on the farm, coming out in the spring with his stock stunted so that he can never make much out of it afterwards, no matter how well cared for. The fall is the proper time for the farmer to take an invoice of his grain and forage on hand, and make sure that he has enough to carry his stock through the winter in good shape. If he has not he would better cut down his flocks and herds accordingly, for a few animals in good condition in October or November will sell for more money than twice the number will bring in the spring in a half-starved condition.

"A stitch in time saves nine." Neglect in making repairs at the proper time causes much loss on some farms. Procrastination is not only the thief of time, but is the besetting sin of many farmers. A few hours spent in repairing the line fence might have saved a lawsuit between neighbors; a broken plank in the stable floor may result in the loss of a valuable horse; putting off the mending of a broken gate may let the cattle into the corn field; that leaky roof will soon cause the frame of the building to decay; that board off the poultry house

will result in roup among the fowls; that old harness, if not repaired at once, may result in a serious accident; these are only a few of the leaks that come from the habit of procrastinating. In riding over the country one sees various examples of carelessness and neglect, such as lack of proper shelter for live stock; cattle wearing those ornaments called horns running in the same feed lot with horses and sheep; swamps and marshes that by expending a few dollars for tile could be made the most productive part of the farm; open ditches through cultivated fields which could be easily tiled and farmed across; feed for the animals thrown in the mud, where more is wasted than eaten; farming year after year around large stones that should be buried, stumps that could be removed with a little expense for dynamite and shade trees that are of no use in the grain fields and should be cut down; thistles and other noxious weeds allowed to ripen and scatter their seeds over adjoining fields and farms. These and many other evidences of neglect are so prominent on many farms that when the owners grumble about hard times and complain that there is no money in farming, as a business, we are naturally forced to the conclusion that they have missed their calling and that the cause of their failure lies not so much in the business as it does in the men, themselves.

Some men are what we might call only nominal farmers. They simply make the farm a place to stay over night; the balance of their time is occupied with what they call side issues, such as buying and shipping live stock, dealing in real estate, speculating in futures, acting as agents for machinery, running a threshing machine, hay baler, etc., investing in imported horses, raising and training fast horses, spending money and time in trying to be elected to some county office, and many other things of a similar nature that have no connection whatever with legitimate farming, until finally the sheriff steps in and takes possession and closes the scene. Then there is another class whose sins are those of omission rather than commission; those who are in that state of ignorance, often called bliss, who are opposed to what they are pleased to call book farming, who will not take an agricultural paper because there is so much in it they do not believe. They do not attend the Farmers' Institutes because they have already forgotten more about farming than our state speakers ever knew; they will not consult the boys about the management of the farm, for that would cause the boys to become conceited and after awhile they would know more than the old men; they do not shelter their animals in winter because exposure to cold and storms toughens them; they do not believe in tile draining, for that causes both drouth and floods; they will not keep high grade stock because it is more subject to disease than scrub stock; they do not patronize their home fire insurance company, but pay to the agent of some old line or stock company about double the amount necessary to secure a policy in a good mutual company composed entirely of farmers; neither do they buy their farm supplies of their home dealers, but are always ready to be taken in by the oily-tongued traveling agent. The only plausible excuse for their actions is that given by P. T. Barnum when he said, "The American people like to be humbugged." When such farmers learn to conduct their affairs strictly on business principles they will have a higher appreciation of their calling and do less grumbling about hard times and the farm not paying.

The days when a farmer could get rich by plodding along without enterprise are gone; mere economy and industry are not enough, there must be intelligence and original thought, the same as that given by the successful merchant, manufacturer or banker. The waste on the average Ohio farm would be considered by any merchant as a handsome profit. What we need more than anything else in our occupation is that close application to business and attention to details which is essential to success in any vocation.

## SOME OF THE SOCIAL AND FINANCIAL BENEFITS OF FARMERS' INSTITUTES.

By REV. J. I. TAGGART, Rainsboro, O.

[Read at the Farmers' Institute held at Rainsboro, Highland County, January 22 and 23, 1900.]

Whatever helps to increase the social element in man's nature better prepares him to enjoy life and benefit those around him. One of the things that distinguishes a civilized man from a savage is his social qualities. But the social element in the nature of the civilized man must be cultivated and developed for use by coming in contact with kindred spirits in order to become an important factor in making life agreeable and pleasant. Social life has its beginning in the home circle, or at least it ought to begin there, but observation has shown that in some families it lingers too near the zero point to be very helpful. But in many, if not in most of the homes in this region at least, the social atmosphere is healthful and inspiring and so beneficial to the members of the home that it would be difficult to estimate its value. And when boys or girls go out from a home where a healthy social atmosphere prevails and where love and friendship reign, how the home training helps them in meeting the stern realities of life and how it fortifies them against bad influences and evils of every grade and character and helps and strengthens them to carry their own social habits into the circles where they move, thereby elevating and benefitting society wherever they are brought in contact with it.

Society everywhere needs the beneficial effects and uplift of social culture, in its purest, simplest and most elevating form, and nowhere is it more needed than among the farming class in the rural districts. The distance that separates them and the few occurrences that are calculated to bring them together place them at a greater disadvantage for social culture than almost any other class of citizens. In earlier times it was different. The barn and house raisings, the wood choppings, log rollings, husking frolics, wool pickings, quilting bees, apple parings and other gatherings along these lines brought the farmers and their families together frequently; but the times, customs and habits among the rural population have so changed that other things must be inaugurated and instituted to take the place of those that have fallen into disuse, and among the things that have been organized that helps to meet this felt want is the Farmers' Institute. It is true that the Farmers' Institute was not started for the purpose of affording an opportunity for the farmers and their families to meet for social culture, but it opens up the way for that very thing. The farmers and their families need something that will bring them together where they have a common interest, where the subjects under consideration and the themes discussed are along the line of their business, and this is just what the Farmers' Institute was designed to do, and just what it does. It holds a place in this regard that is unique and different from most other organizations. The very fact of our coming together where we have a oneness of interest naturally produces a kindred feeling, and strengthens the social tie that binds us together, and leads us to improve the present and prompts us to seek future opportunities for social intercourse with each other.

But important a factor as the Farmers' Institute is in creating friendship and promoting social culture among the farming class, there were other interests that made it a necessity and called it into being. Much of our soils were so worn and impoverished by continual cropping and lack of proper management that the occupation of farming was growing less remunerative every year and hence some of the wiser and more progressive among our agricultural men saw that something must be done, and they began to cast about for some plan which, if put in operation, would counteract the tendency of our generation following in the

footsteps of its predecessors, ignoring all scientific laws and plowing and sowing, and reaping in the same manner without intelligent thought as to the time and manner of sowing, the proper rotation of crops, the saving and applying of manure, the use of commercial fertilizers, and the using of clover and other leguminous plants to build up the impoverished soils and thereby increase their fertility.

After careful deliberation and thought, the combined wisdom of those having the matter under consideration brought forth the Farmers' Institute to meet the demands of the hour. Legislation was soon secured and plans inaugurated to give every county in the state of Ohio a Farmers' Institute that would avail itself of the opportunity. A few years after such legislation was secured, the farmers of this vicinity met and organized a strong working society that met once a month for several years, during which time nearly every phase of agricultural pursuits was discussed by members of the society, and in addition to the lectures and papers and discussions by the home talent, the State Board of Agriculture has sent us two able lecturers each year since we organized, hence we have had line upon line and precept upon precept, here a little and there a little, all through a period of nearly ten years.

All the seed thus diligently sown has not been productive. Some of it fell by the wayside and the birds of indifference picked it up; some fell on stony ground and sprang up immediately, but soon perished on account of the shallowness of the soil. But some of it, and we are inclined to believe that much of what was sown, fell on good ground and brought forth fruit, some thirty, some sixty, and some even a hundred fold.

The beneficial results of the teachings and discussions of the Farmers' Institutes derived by us have come so gradually that some may have failed to observe them, but they have come all the same. Had some competent individual of keen observation and good judgment circulated among our farmers during some years just previous to our organization, and now after the lapse of ten years were to come again, he would see a vast difference in almost everything that pertains to farm interest, especially among the class of farmers that have attended the institute meetings with the view of being profited. He would see an improvement in the appearance, and convenience, and comfort of the homes and out-buildings, better stock, better housed and more economically fed, better fences, better agricultural implements, more manure saved and more scientifically applied. He would see the soil better prepared and an improvement in the cultivation and yield of the crops. Of course he would find some of the farmers following in the old beaten track, doing just as their ancestors have been doing through generations past. True, some among the old class of farmers that were industrious and persevering were prosperous before the Farmers' Institute was organized and are prosperous still, but the majority of those who have kept shy of the Farmers' Institute are reaping the consequences, and must change their methods if they ever succeed to any great extent.

Now, just how much actual cash the improved methods brought about through the teachings of the Farmers' Institute has put into the pockets of the farmers of this vicinity I am unable to determine, but of the fact that their bank accounts have been enlarged and their material wealth has been greatly increased, in the betterment of their farms and other things that pertain thereto, I have no doubt. But after all that we have gained or learned thus far, it is evident that the goal of attainable perfection is still a long way in the distance and it behooves us to buckle on the armor anew, and if others are determined to do business in a loose, slipshod manner and farm with a hop, skip and a jump, and shut their eyes to the changed condition, ignoring all scientific laws and improved methods and persist in keeping in the old ruts we cannot help it. We must use the foot-



hold of knowledge already gained to help us climb to a higher altitude of efficiency and progression, and never cease our efforts or slacken our speed until we have reached the attainable summit of perfection in agricultural pursuits.

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### FREE RURAL MAIL DELIVERY.

By C. E. ALLOWAY, Kimbolton, O.

[Read at the Farmers' Institute held at Cambridge, Guernsey County, January 31 and February 1, 1900.]

The subject of free delivery of mail to the inhabitants of small villages and farms, has of late attracted considerable attention. It has been discussed by the press, by the Grange and other farmers' organizations, and by some persons holding high offices of honor, trust and profit under our government.

Some of our Postmasters-General have been for some time recommending that Congress make appropriations to test rural free delivery of mail and at last, in 1896, Congress began by appropriating the meagre sum of ten thousand dollars, and has kept increasing the appropriation until at the last session it appropriated three hundred thousand dollars to continue the experiments.

We are living in a remarkable age. You may search the pages of history, and nowhere can you find recorded such rapid progress in civilization, in sources of education, in fact, in almost everything that goes to make life worth living, as in the age in which we are now living, but the dweller on the farm has not kept pace with his city neighbor in all those things which mark the difference between the old and the new.

Fifty years ago, and even less, men who had acquired a competency in trade or manufacture showed a disposition to change from an urban to a rural life, but with the close of the great civil war the tide turned, and the farmers and farmers' sons and daughters began to flock to the cities and the great problem has been, how to keep the boys on the farm. Many people who do own farms rent them and move to town because of the greater facilities there. Thus their farms are worked, as mines and quarries are, for the amount of marketable material they can be made to produce, resulting in a widening of the breach between the rural and the urban population.

There has been too much government favoritism shown to the cities and the matter of postal service is referred to as an illustration of the injustice to the farmer. The government has been continually improving the postal facilities of the cities, but the postal facilities in the country are but little better now than they were fifty years ago.

In some of our cities the mail carrier makes his rounds as many as four or five times a day; in Chicago, for example, a man may live five or six miles from the postoffice and yet have his mail delivered several times daily. If it is right to deliver mail to the leisure class as well as to the busy business men four times a day, why is it not right to at least make a move towards giving the farmer better mail facilities?

"Agriculture is the bone and sinew of the world, the saving clause to the welfare of the nation." Then why not try to better conditions by giving to this "saving clause" postal facilities that will compare a little more favorably with those enjoyed by others, whose bread and butter depend upon the farmer? If anybody has to go to the postoffice for his mail, why not let the city people go.

who, many times, may be only a few minutes' walk from the postoffice and many of whom have a great deal more time to go to the office to get their mail than their country neighbors have, and appropriate the money thus saved to carrying the busy farmers' mail to their rural homes?

Other countries have long been having free mail delivery. England has had it for more than one hundred years; if the United States can not devise better methods for the farmer than those of England, she ought, at least, to imitate them. Go to far-off India, and you will find that in that vast empire, no matter in what jungle he may live, you will be unable to find any person whose mail is not delivered at his door; what India can do, I have faith to believe America can do. Japan has free mail delivery, and even China, it is said, has a much better rural service than we American farmers enjoy; if we cannot give our rural population a better postal service than the "heathen Chinese" enjoys, let us try and give them a service equally good. Foreigners often ask why it is that this great and enlightened nation has no free delivery system in the rural communities as they have in Europe.

Give us free delivery and you will give us a potent factor to keep the young folks on the farm, and prevent them from joining the great army of unemployed in the cities; it will take much of the loneliness away from farm life, will make the homes more social, and give farmers, at least during the winter months, a chance for self-education they would not otherwise enjoy, will keep them in touch with the great interests of the day. Said the committee on Postoffices and Post Roads of the Fifty-fourth Congress: "Rural postal delivery will elevate the standard of intelligence and promote the welfare of the people." It would enable the farmer to keep in touch with the markets, thereby preventing his being taken advantage of when there is a rise in the price of any of the products of the farm which he may have for sale. The money loss to the farming community through lack of information as to the condition of crops, markets, prices, etc., is estimated at millions of dollars yearly, and a free mail delivery would leave the major part of this in the pockets of the farmers, where it rightfully belongs.

How often do you hear farmers say, "I would like to have a daily paper, if I could only get it from the postoffice before it was a week old;" if we had free mail delivery, he could take a daily paper, some good magazines and reviews, and spend the time consumed in going to and from the postoffice in reading, which would greatly tend to intelligence and information, and thus put more sunshine into his home, and induce his sons to more thoroughly appreciate their business and stay upon the farm.

Said Postmaster-General Wanamaker: "The extension and improvement of no other branch of the public service has proven so universally successful and satisfactory, in modern times, as the free delivery of mail to addresses at their doors." Such being the case, we would like to see the ultimate extension of free delivery of mail to every inhabited nook of our country. It has been begun by giving it to several communities in different portions of the nation, by way of experiment, and it should be gradually extended to every corner of the land. Some object to it on account of the cost; if you get more than value received for the money expended, are you not satisfied with the expenditure? There are many things that are very useful, although we can not estimate in dollars and cents the benefits derived therefrom, and this is one of them.

Again, is the government carrying the mails to make money? Said Mr. Crawford, a member of a recent Congress: "The object of our postal system is not to make money at the expense of the people; it is to give to every citizen a fair and equal chance in the race of life, for business, for intelligence, and all the blessings that result from civilization. The farmers have to bear their

share of the burdens of the government, then why not give them an equal chance in its advantages?"

The study of the postal service is the direct study of civilization, and its benefits are so great, that it should not be looked upon from the standpoint of a source of revenue. What department of our government, except the Treasury Department, is self-sustaining? Some say, wait till the Postoffice Department becomes more than self-sustaining before you give us this boon. Are our schools self-sustaining? Do you hear anybody say, "Do not establish a school district, or build a school house, or hire a teacher because it will cost something"? Why are we taxed for their support? Because it is to our advantage, not only as individuals, but as a nation, for all to be as well educated as it is possible to be. It is of greater importance that citizens of our country be educated, than for the citizens of any other nation in the world, because there is no other nation where all the people have as much to say in the government (except Switzerland) as they do here. Free rural mail delivery will tend to diffuse more knowledge among the people and bring the rural citizen in closer touch with his government, which at the present is a very much needed condition.

Free rural mail delivery has been tried in almost every state and territory in the Union, and wherever tried, it has been followed by an increase in the amount of mail carried, thereby increasing the receipts, the increase being sufficient, in some cases, to make up for the increased cost and leave a small surplus. In nearly every place where it has been tried, the people say they would sooner pay the carrier directly out of their own pockets, than have the service discontinued. Has it received universal praise? No, but does the church receive universal praise? There are some people who would object to anything even if it had for its object the upbuilding, and elevating, and ennobling of humanity in general, if it in the least interfered with their temporal welfare; so, in looking over the reports of the places where it has been tried, we find that the fourth-class postmasters whose offices were discontinued, and the star route carriers whose routes were abolished, frequently raised a hue and cry against it. Also, the saloon-keepers are opposed to it, for when the people's mail is brought to their doors, and the carriers bring them some notions, etc., from town, they do not go to town so often, consequently they are not so frequently thrown in reach of the saloon's temptation, thereby saving not only the money which might have been spent for rum, but health and many a heart-pang to their loved ones at home. Thus, in our estimation, one of the objections raised against free rural mail delivery becomes a strong reason for its enactment.

There are some reforms needed in the Postal Department which, when made, will greatly increase the receipts. It is estimated by the Postmaster-General that, during the last fiscal year, the government was defrauded of about twenty-five millions of dollars by the perversion and abuse of the privileges accorded by law to second class mail matter, and he proposes to bring back its application to its original and just scope, which, when done, will produce a large surplus of receipts over expenditures; these will, if judiciously applied to that purpose, extend free delivery to millions of our population.

Is it not a fact that one man can carry mail to fifty men cheaper than for each of the fifty to go to the postoffice himself?

We must make farm life more profitable and pleasant, in order to lessen the influx of farmers' boys and girls to the already overcrowded and congested cities. Rural mail delivery will be a step in that direction, as it will practically give country life some of the advantages enjoyed by the cities, will relieve the monotony of farm life, and the farmer, his wife and children, when their day's work is done, can gather round their fireside, take up their papers and soon know the current events, etc., as well as if they were in the city. This will

stimulate the farmer's home pride and encourage the much needed spirit of progress and contentment in rural life, will elevate him, and make his vocation more pleasurable. It will bring the people closer together and you know that want of intercourse among the people was one of the causes that helped bring about that great conflict which caused this government to shake and tremble to the very foundation, cost us the loss of thousands of precious lives and millions upon millions of treasure, is yet entailing upon us an annual expenditure of millions more, and left hanging over us a national debt, which will remain a burden for many years to come. It will also give the isolated rural homes the same opportunity to keep in touch with the world's progress that the urban homes enjoy.

If it is good for the people of the cities to have free delivery of mail, why is it not just as good for those who live upon the farms? If a business man cannot walk a few yards for his mail, how can the busy farmer, upon whom all depend for their bread and butter, find time to go from two to six miles and more for his mail? And, after all, is the farmer not a business man and is it not just as important that the farmer be kept in touch with the happenings of the world as it is for any other class of people? Why should the government virtually give a premium to the residents of the city at the expense of those who live in the rural homes?

Says First Assistant Postmaster-General Heath in a special report on free rural delivery service: "There has been nothing in the history of the postal service of the United States so remarkable as the growth of the free delivery system within the past two years, largely by the aid of the people themselves, who, in appreciation of the helping hand which the government extends to them, have met these advantages half way, and it has implanted itself so firmly upon the postal administration, that it can no longer be considered in the light of an experiment, but must be dealt with as an established agency of progress, awaiting only the action of Congress to determine how rapidly it shall be developed." He thinks the free delivery of mails in rural communities can be widely extended with great benefit to the people, and with but little detriment to the revenue.

By comparing the cost of free delivery of mail in the rural and urban homes, we find that it has cost eighty-four cents per capita to deliver mail to the farmers against two dollars and eighty cents per capita in the cities, and with no increase in receipts in the cities, whereas, if rural delivery were established, there would be quite an increase in the receipts from the discontinuance of the fourth class postoffices and the abolishment of star routes, besides what would be derived from the increase of mail sent and received. But what if it did cost something? Did we not give money, and did we not give blood, that Cuba might have liberty and enlightenment? Are we not now giving money in the far-off Philippines and the precious blood of some of our best citizens, in order that those people, who have been for centuries under the galling yoke of Spain, may enjoy the blessings of liberty and enlightenment? Then why not, for the delivery of mail at their doors, give money, without blood, for the enlightenment and upbuilding of the saving clause of our nation—the rural people.

## THE SOCIAL SIDE OF FARM LIFE.

By BLANCHE C. LONGSTRETH, Union Furnace, O.

[Read at the Farmers' Institute held at Logan, Hocking County, February 12 and 13, 1900.]

A certain Irishman, finding life rather stormy with Biddy his wife, declared that they would just divide the house between them and when Biddy asked which side he would take, emphatically replied he would take "the inside." Now it seems to me that farm life has become divided a little after the Irish fashion. Plowing, sowing, reaping, mowing, seeding, feeding, buying, selling, in short, the greedy Irishman—work—has taken the inside, while society and Biddy are together, for in fact it strikes me that the social side of farm life is the outside. And this notwithstanding the fact that we should hunt in vain anywhere, everywhere, for a more sociably inclined people than are farmer folk. You might guess this by the way they shake hands. The farmer knows better how to shake hands than other man in the world—unless it be once in a while a politician, and that is a temporary affair—but the farmer shakes hands oftener, longer, and with more warmth than any other, and no one can give a more royal, whole-souled welcome to an expected or unexpected guest than can the typical American farmer, whether you find him among the hills of Ohio or on the western prairie.

But when, how and how often is this social nature exercised or gratified? Well, I think in a very spasmodic, unsatisfactory, feast-and-famine like way. Perchance a farmer wants to buy some cattle, sheep, hogs or something, and is going to interview another farmer on the subject. Now if his wife has the bump of sociability sufficiently developed to be always on the lookout for a chance to go somewhere—a few of us have—she may see in this her opportunity and go along for a visit; but if she be known among her neighbors and friends as a good farmer's wife, the chances are "sixteen to one" she will consider herself too busy to go, even if invited by her good husband. Then once in a while, by something like a sublime effort, a farmer family will take the express and actually go on a visit, pure and simple; go to spend the day with a more distant neighbor, and this is to be a "red letter day" in the homes of both visitor and visited for perhaps months to come. Indeed, such visits are rare enough, and when they do occur it usually happens that the visited are the sisters, or the cousins, or the aunts of the visitors, and its "all in the family" at last.

Then there is the occasional inevitable surprise party, which seldom surprises, and which tells the world around how nearly some one has reached the top of life's hill, or if he be going down the western slope; when for a time the surroundings of some farm house take on the aspect of a camp meeting; when big baskets emerge from buggies and big cakes from baskets—ten, twenty or thirty of them—to supply a capacity for which three or four would be gospel measure, and pies, chickens, etc., in the same proportion. No wonder the next week's county paper records how the tables groaned. The spirit of the surprise party is admirable, and the hospitality full and free and I would not be understood as finding fault with it, but there are barriers in the way of its affording the real social enjoyment desirable. First, it is made up of all ages; the young do not enjoy themselves quite so well as they might, because under the gaze of so many older folk; the older ones likewise feel some restraint because of the presence of the children. Then too, the numbers to be served, and the serving of them at three or four successive tables, consume so much time that there is comparatively little opportunity for real social intercourse. By the time the last table has dined the guests are preparing for the home-going; then comes the

gathering-up time, which again interferes with the social element. Altogether, we go home with a somewhat unsatisfied feeling, a feeling of having seen every body and nobody. We have said it was hot or cold to twenty or more people, or agreed with a dozen or two that it looked like rain, but of real, heart-to-heart, mind-to-mind converse, we have had none. We have a sort of feeling of having seen a procession go by. As a whole, the surprise party is not a social success.

What of the young people on the farm? Well, they also have their surprise parties and in the main the social side of their lives is vested in these, and in singing schools, spelling schools, and the various church services. The singing school is good, very good, as far as it goes, and when well conducted the hour or two spent there will be pleasantly and profitably spent, but if the teacher earns his money as an instructor there will be little time spent in a social way. The spelling school may be better than nothing and it may be worse, owing to circumstances, and the circumstances are uncertain. I believe it is generally understood that the spelling is the excuse for the meeting rather than the object of it, on the part of the spellers at least. It is a free-for-all institution, and the rough, even the "tough," may be there—for we have a few of the former and now and then one of the latter, even in the country. The teacher may be an excellent one, but his day school and his night spelling school must be two very different things. No teacher can be expected to regulate the manners and morals of a countryside in an evening. Being in a public building, there is, in the nature of the case, a liberty allowed and indulged in that could not be thought of in a home. There is no host or hostess to respect, and in point of conduct each one is, to a great extent, a law unto himself, and such conditions are not conducive to politeness and refinement at least. I am glad that our young people here in free America do not have to be under such a conspicuous system of chaperonage as are the young people of the eastern continent—a chaperonage suggestive of suspicion and being in itself hidden accusation. I am glad that American society is purer without this than is French society with it, but there is room for improvement here, and I do not believe that in general the evening spelling school in the school house has a refining influence on the manners, morals and conversation of our young people. It is not an educator along the social side of farm life. Our young people should have something better in its place.

I have mentioned the various church services. You say, "What! Call these social events?" Well, "There's the rub." I must confess that I do believe that the dearth of social advantages in farm life has created a tendency on the part of old and young, to turn church going into a social channel. Much Saturday baking is done with a view to the entertainment of guests on Sunday, and many Sunday visits radiate from the church service as a center. Indeed, I am persuaded that church services have become badly mixed with the social side of farm life. The naturally social inclinations of the young people clamoring for some place to go; they seize upon the evening services, convert them into mere social gatherings, sometimes chatting and laughing even during the service, and often the gathering around the church doors at the close of service is much more suggestive of a party than of a prayer meeting.

Things being thus, then the question is, Do we need or want a change? Is this a subject of sufficient weight to be worthy the time and thought of this or other Farmers' Institutes? Personally, I am an expansionist here. I think we need expansion along the social side of farm life, whether in our public domain or not. How shall a change be wrought? What are some of the remedies? The trouble is that any development along the social side of farm life is undeniably fraught with difficulties. It is easy to arrive at a diagnosis of the case, and easy to *prescribe* remedies. I can name several remedies myself, but the trouble is to

get the prescriptions filled. Some such remedies are turnpikes, rural mail delivery and telephones. Bad roads make one of the greatest, if not the greatest, impediments in the way of social development in the country. Miles of hub-deep, putty-like road, I own are sufficient to cripple the enthusiasm of the most ardent social schemer. or indeed if his enthusiasm stand the strain, the crippling would very likely fall upon some more substantial part of his make-up; and in these days of lightning express trains, trolley cars, automobiles, telegraphs and telephones, it is discouraging to go from three to ten miles for one's mail, and then sit down and read news that one's city cousins have read and stopped talking about; a daily paper is an impossibility to the average farmer; he can not make a living going for it. Improved roads and rural mail delivery are so closely connected that they must follow speedily one upon another, whichever comes first. If country roads were piked, the delivery of mail would be so much easier that it would very quickly follow, and, *vice versa*, if rural mail delivery be once granted, Uncle Sam's attention must be very forcibly called to the necessity of better roads.

The third remedy, I think, is eminently worthy the attention of all farmers. There is no real necessity that all life's conveniences should be banished from the country, and that progress should characterize none but town and city life. I am not going to indulge in any visions of our farmers going to town in trolley cars just yet, but I am going to say that so simple a thing as a telephone system is possible, practical and would be very profitable to the farmer. I believe it would be exceedingly profitable in a strictly business sense, but am speaking now of social interests and I think a rural telephone system would do more for the development of the social side of farm life, more toward giving us something worthy the name of society, than any other improvement to be thought of.

This is not a visionary, or even an original idea. We happened ourselves just a few months ago to see some of its workings and reap some of its benefits, while spending a little time with a Meigs county farmer. In the first place, we met our host in a neighboring town, and he telephoned his wife, at home on the farm, of our coming, so that soon after our arrival at their station a man came with the wagon to meet us. Within the two hours we stayed at the house one neighbor was called up to sing for us, another was called to be asked about a patent carpet stretcher, of another, inquiry was made concerning a sick child, and last, when we were ready to start away, the agent at the village was asked if the train were on time that we might not wait unnecessarily at the station. This was the observation of just about two hours. What possibilities we saw in it as a part of daily life on the farm! What a social factor it could be, what daily chats instead of long days of silence, what plans made, what meetings arranged, what appointments changed when necessary; and this last means a great deal when so much depends on wind and weather. Suppose the date of an expected social meeting arrives with rain, wind, hard frozen roads or bitter cold; no one can go; everyone disappointed—that is all. No change possible, only to meet by chance weeks hence and say how sorry we were. With the telephone, hear the word going from neighbor to neighbor and another appointment made.

The telephone mentioned was no chance outside speculation to connect towns. It was just the result of grit and gumption on the part of the progressive farmers, who determined not be an isolated species of the human family, but to be in touch with the world around them, and it was doing more to bring them in contact with the outside world than anything else you could think of. The line was owned and operated by a joint stock company of farmers and, after a moderate expense in establishing the line, any one could have a box by the payment of a small monthly rental, and I feel sure that no one who once had a box would let it be taken out for twice its cost.

The farmer is not a natural agitator, but he should become one. Nothing is accomplished without agitation. The social side of farm life now unites with its business interests in calling for agitation along the line of good roads, free mail delivery and telephones. But what of the time while these are coming? Shall we sit down and wait? No, rather let us get ready for them. Let us start social development by surmounting obstacles and prove ourselves worthy of advantages sought, and thus speed their coming.

This brings me to consider some forms of social intercourse. Some one may name the Grange here. I must speak as an outsider, but I believe the Grange meets a want in farm life; it is, however, distinctly a farmer's order, and if I understand it rightly, is chiefly a business organization. Now, this is perhaps needed to keep pace with like organizations in other lines. We have merchants' associations, mechanics' unions, etc., and this would seem to be a reason for farmers' organizations, but these others are not called social affairs, nor can the Grange be so called. The social side of farm life calls for something more. A writer in a late *Stockman* writes glowingly of farmers' clubs in Michigan, and these are good, only I do not like the name. Why not have clubs and why not give them just such names as we would give them if we lived in town? Right here is one trouble with the farmer. He has allowed himself to get so thoroughly wedded to his occupation that the two are inseparable. He eats, he sleeps, he rides, he walks, he visits; he does everything, as a farmer. He has thus narrowed his path in life, till it is like the sheep paths over his hillsides. The ancient world was divided into two classes, Jew and Gentile. The modern world would seem to be divided into two, farmers and the rest of mankind. What we farmer folk need to do, is to get out of these little, narrow sheep paths and walk alongside of the rest of creation. Let us lose sight sometimes of our occupation. Let us do some things, meet sometimes, not as farmers, but as men and women. Let those of kindred tastes organize clubs. Make them literary, in part at least, and they *will* be social, they cannot help it. If it be thought to require too much time for the members to furnish original matter, then make them simply reading clubs. Reading together is as pleasant as talking together, and more so, for it furnishes something to talk about.

The very popular Tourist's club could be just as pleasant and as profitable in the country as in town; in imagination, you take various trips, many of which most of us will take in no other way; select some country, state or single spot of interest to visit, as for instance our national park, Yosemite valley, Mammoth Cave, London, the home of Shakespeare, sunny Italy — the number is legion. The place selected, read everything you can find about it, study the route from start to finish, find out what you would be likely to see if there, and so tell about it; in short, go there on paper. It is a fascinating way to study geography and a safe way to travel.

If such a club be thought a little too serious for our young people there is a form of evening party which is lighter, and which can be made as full of fun as any one could wish. Let it be a fireside or fagot party, where each one brings a fagot for the fire, and while his fagot burns he must contribute something for the entertainment of the party. A song, recitation, reading, story, even a joke or conundrum, anything that may strike his fancy. Here is a field for all, from the gravest to the gayest.

This is something akin to the old-time literary society or lyceum, but is better because, for the young especially, a home circle is better than a club-room. A pleasant home, a glowing fire on the hearth, and a happy circle around the hearth-stone is a scene which poets never tire of picturing. No wonder one poet has put our fires next our altars. It was doubtless the thought of such a scene as this that inspired Halleck with the words for Marco Bozzaris' battle



cry. It never could have been said with any effect of a cannon stove in a school house: "Strike for your altars and your fires!" We want intellectual and social development side by side; we want for our young people the refining influence of an intelligent home circle; we want them where they will learn to be easy in manner and polite in speech; in short, we want them to learn to be at home in the homes of others, and let me say right here that one whose social enjoyments have been mostly in public halls, etc., does lack just this quality of being at home in other homes. To sum up, we want some influence in farm life, which will make that life loved not less, but more, and which will make farmers and their families ready for any situation in life. I do not refer to conventional rules of etiquette, though these are not to be despised, but I mean a readiness to mingle as a social being in any social circle, without embarrassment or self-consciousness, because of having our home in the country.

Social advantages must cost more in trouble, in sacrifice of time and, perhaps, in money, in the country than in town, but they can be purchased and they are worth the purchase price. And if we would mingle in the world of men and women as such, and not everywhere and forever as farmers exclusively, we must have a broader social life on the farm.

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### LITTLE GRAINS OF SAND.

By J. E. WING, Mechanicsburg, O.

I stood a few weeks ago on the brink of a mighty cañon. Under my feet the snow lay, about me stood pines and spruces, the grass grew rank, the sun shone bright, for I was eight thousand feet above the sea. Below me the cañon lay, deep, dangerous, dreadful, nearly a mile deep it was. As I looked down into its mighty depths I could see the sun shining along the narrow bottom; no snow there, instead the tiny creek that wound in and out was bordered by trees, some green, some with their yellow coats of autumn. Here and there there were mighty cliff walls, some were a thousand feet high in perpendicular ascent, again there were great rock-strewn slopes. Far below the hawks sailed, tiny specs, far below the waters ran, but I could not hear their murmur; only the wind sighed softly through the pines over my head and the tiny birds chatted in the boughs.

As I stood there alone, with only God near to tell of His most wonderful work, I fell to wondering what mighty power He used in carving this tremendous chasm, how He piled these glorious mountains. Surely it has taken some tremendous upheaval of Nature to accomplish this. Yet, as I descended the winding trail that leads to the bottom of the cañon I saw that the rocks were all sandstone, that the beds lay as level as a pile of buckwheat cakes, that the ledges differed somewhat according to their position, as though one were to put now and then a cornmeal cake between those of buckwheat, and then when I noticed closely I saw that on the opposite side of the cañon at the same relative height the same ledge appeared. The mountain seemed to have been cut cleanly in two with a great knife and the sides spread apart. But it was not done in this way. Going on down, beside the tiny creek that murmurs ever over the stones, and sitting by that tiny pool, watching the bottom of it closely, I saw that there was a continual procession of tiny grains of sand rolling over and over, loitering now and then, hastening again, rolling at last out of the pool and into the hurrying

water where they moved so rapidly that my eye could no longer watch them. Those tiny grains of sand explain the whole mighty cañon.

How is it done? The frost scales off tiny particles of the stone; the rain carries these tiny grains down to the creek, the creek bears them away to the river, the river hurries them on to the sea, the sea spreads them out in layers, and some day our fine mountain range has become the bed of the gulf of California. All this is the work of time. Imagine, if you can, the time that it takes to erode a cañon a mile deep through hard rock, to wash it all away and spread it in the ocean a thousand miles away; imagine, if you can, this breadth of time and you have then one of God's half-hours of working time. But this is not all! Carry your mind back to the time when the cañon was merely a slight depression on the level beds of sandstone, when it had only begun to erode its mighty bed, was that the beginning of time? No, you must look further back than that. The sandstone lies two miles thick beneath your feet. Once before each tiny grain of sand that now composes the sandstone has been torn from its parent rock, once before it has been rolled along by water and spread in some ocean bed, it has solidified into rock by the mighty pressure of the mass overlying it, it has slowly arisen from the sea, has again become a mountain and again begun its slow journey to the sea. Now can you begin to understand how God does His work?

I want in this paper to appeal to the young people, I want to show them the value of little things. In fact, there are hardly any things of importance that are not little things. Plants grow from cells; these tiny cells require the largest microscope to see them, yet these cells, added together, at last make the giant trees, four hundred feet high sometimes. Perhaps we are taught that the most important thing to consider on earth is the occupation of money making. I have nothing to say against money, why should I? Money is simply the evidence of human labor and achievement. Naturally we are somewhat anxious to lay up money, there may come rainy days, there will come the time when, perhaps, we will need to clothe some little ones and a few years later they will want to go to school and will have to have books and eye-glasses, maybe, and there will be the necessary charges for repairs, if they play football. It is very easy to imagine what we can do with money after we have it. So the eagerness to get money is not without good, praiseworthy foundation. The scriptures say that "the love of money is the root of all evil." That is no doubt true, yet, consider, it is the love of money, the hoarding of money, the bending of all one's thought to the getting of money that is evil. It is not evil to have an ambition to have money enough to live in comfort, to have education, culture, comforts for loved ones, this is not the love of money, it is the natural respect that every one should feel toward it. We all want money enough to accomplish our ambitions. These ambitions vary. How well I remember when the height of my ambition was to own a pair of second-hand skates that would cost only fifteen cents! Now it has raised a little. I want a bath-room, I want a library, I want another barn, but stop, there will not be time to tell all that I want today.

It is right, then, that the lads should want money, it is right that they should be thinking of how to get it; these Institutes are managed with the intention of helping the farmers make more money, so we will discuss a little this question of money making. A man went to the Klondike. Maybe you knew him. He walked over the trail to the little stream, he drove down a stake on his claim; no one had been there before him; he took a shovel and dug the earth and washed it and it yielded him a quarter of a million of gold-dust in two months. That is the way fortunes are made? No, it is not the way. That man, nine chances out of ten, will end his days in poverty, and he will cause hundreds and maybe thousands of other men to tramp the weary way to the

Klondike and back again. I do not condemn the gold miners, theirs is a legitimate occupation and necessary, but what a lot of gray-haired paupers 'it makes! It is the poorest way on earth for the young man to seek to get rich. I think that if you will talk with the wealthy and successful men today they will nearly all of them date their beginning of fortune from the time when they saved some very small sum. Maybe it was no more than ten cents. Ten cents is a very good sum to begin with. I will tell you a thing to think of and remember, if you can not save in smaller than five or ten dollar sums, you will never have a fortune of your own. Does that sound hard? Think of it. It is true. Suppose you are a lad on the farm. If you are earning something for your father, ask him to pay you a regular wage. Then take this money and buy your own clothes and books and what you need, but try to save a part of it. See if you can save that ten cents! See if you can add to it another ten cents! See how you can make it grow. When you have enough together, put it at interest, or if you think best buy yourself a pure-bred sheep or calf, or pig. Learn to have property of your own and to add to it steadily. No matter how slow your increase is, so it is steady, you are on the sure road to prosperity, and to fame, too, possibly. The man who will never save until he has a good big pile to save, it is safe to say will never save anything. The man who can not deny himself the luxury of a cigar now and then, or a drink of whisky, or who must always eat a fifty-cent dinner when he is away from home, is not likely ever to become independent; all his days he will work for some one else.

I know a man who began life on a farm in Illinois. Land was cheap there, but he owned none, he worked as a farm laborer. Then he saved enough wages so that he bought a small lot of cattle to feed. He drove them to the village of Chicago and sold them for one dollar and fifty-cents per hundred pounds; they were killed within a mile of where the court house now stands. He went back and fed more cattle, he bought a little land, as he went along he worked steadily, saved what he could, had faith. Each year he continued in his business, come good times or come bad; gradually he accumulated more and more land, he fed more and more cattle, then he sold out in Illinois and went to Missouri. I was on his land last month. He owns now twenty thousand acres of rich land; he had just unloaded on his farms eight thousand five hundred good cattle to feed; he owns a bank; there is no man more respected, for he is no miser. In all his life he has never made any great profit on any business transaction, it has all been a matter of slow growth, it has been the adding together of "little grains of sand".

Now it is not possible to do just that in Ohio, hardly possible, at least; yet, on the other hand, this man has far more of wealth than he needs or is good for any man. What he gets out of life is not in proportion to the care and work that he must do; he would be richer with a thousand acres and more leisure than with twenty thousand and all his time occupied in managing it. There is that danger in amassing property. After a time the property owns the man, instead of the man owning the property; that is always a pity and a misfortune.

What is true of gathering together wealth is just as true of gathering together other and more precious things. It is true of character building; it is not in doing great deeds that character is developed, it is in the smallest things. The lad who resolutely refuses to tell the smallest untruth, who refuses to steal the smallest thing, he it is who becomes the man honored by all for his worth. Great men have very simple natures, the foundation of all their greatness is commonly those two traits of honesty and truthfulness; add to these things knowledge and courage and you have the Washingtons, the Lincolns, the Grants and in our own day the Deweys, the Roosevelts and McKinleys.

Of course it is a grand opportunity that comes to a man now and then when

he can sail into a harbor and destroy a hostile fleet as did Dewey, or when he can carry on a great war and hold together a great nation as Lincoln did, or when he can start the idle factories and put smoke in the cold stacks of the furnaces and set working men eating the farmer's products as McKinley has done, but it must be remembered that these opportunities when they came found the men ready and what made them ready was their life-long habits of living. It was the hundreds and thousands of little things that they each had done, it was the little grains of sand moulded into their characters. To take up each duty as it comes to us, to do cheerfully and heartily the little things that come to our part each day, that is what counts. That is what builds up the useful and honored citizen. That is what makes the man ready to march up San Juan hill, or to sail into Manila harbor.

Speaking of success in life, did you, lads, ever consider how much of your chance of success depends upon your having a habit of courtesy? Did it ever occur to you that this habit is not one that can be acquired suddenly, that you cannot wait to practice it until you meet the great and rich, the ones with whom you think courtesy will pay you? Did you ever stop to think that courtesy itself must come from the heart, must be a habit and an instinct? It is the man who touches his hat to the ragged old woman whom he meets in the road, who has a courteous "good morning" for the farm hand and the stranger in working dress, who finally becomes the polished gentleman, at ease in any society. Such men have a good chance in life, because people like them. Did you never hear of how one of our great men when riding in Washington took off his hat to a slave who saluted him? His comrade looked at him in surprise. "I can't afford to let that man be more courteous than I," was all he said.

Courage. What a glorious thing courage is! Partly courage is inherited, it comes natural to us, in part it is a thing of growth, it is a habit. Some of the men who are renowned for their courage on the field of battle are really very much afraid there, only their resolution will not allow them to flinch; that is educated courage. Absence of fear is perhaps an evidence of ignorance; true courage is the resolve to do one's duty, regardless of consequences. Now, lads, in the case of courage, let me tell you a good way to educate yours. Be brave enough to say "no" when other lads, your comrades, ask you to drink beer or smoke cigarettes or chew tobacco. Be brave enough to say "I do not want to hear that" to the lad who would tell a foul story or use profane language. Be brave enough to go to church, and to ask your chum to go with you, even if he is one of the scoffing kind. All those things may take more courage than it will take some day for you to charge a battery up some San Juan hill! All such little acts are the grains of sand that you need to put into your character, to make you the noble man that you will be some day.

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## FARMERS' OPPORTUNITIES.

By C. R. BETTS, Stryker, O.

[Read at the Farmers' Institute held at Bryan, Williams County, January 1 and 2, 1900.]

Opportunities are presented every day and every hour to every farmer and to his sons and daughters, as stepping stones to help them on to success and greater usefulness in life. They are steps that lead from a low or medium to a higher plane, and as they improve these opportunities presented to them they

will become stronger by reason of latent powers within being aroused to action and will be led on to useful and noble achievements. Through knowledge we obtain hope and hope urges and prompts perseverance. But if we neglect these opportunities as they are swiftly passing on, and stop and ponder with unprofitable reflections upon things that are and things that have been; speculate upon things to come, counting the probable cost in hard labor, self-denial and possibilities and probabilities of a total failure, and magnifying the disadvantages that always are found in the road to success; meditate upon our surroundings, the embarrassing circumstances under which we are placed, the fleetness of time, the obstacles we have to encounter, we give up in despair, sink back into a state of lethargy and say with Whittier, "Alas! it might have been." By allowing our minds and very being to be overcome in this way we are going backward and downward, retarding the advancement of those whom we are in duty bound to assist.

Of all the callings in life there are none more profitable, all things considered, none more noble, none in which greater opportunities are afforded for self-improvement, and none in which a highly cultivated intellect is more needed than farming. Some perhaps will deny that agriculture is a profitable vocation, but I believe that nearly all professions yield about the same profit for the same investment in hard, honest study and toil and general outlay.

We often see monsters in our paths and think that all others are safe and smooth, but when we forsake our own and follow other callings we experience greater difficulties than we heretofore had known and begin to realize that the farmer is about as independent and well situated as anyone else. It is said that every house has its skeleton in the closet and so it is with every vocation in life; each has its ups and downs, every sunshine has its shadow and for every joy and pleasure there is a corresponding disappointment and sorrow. It behooves us as agriculturists to make the best of our calling and not dishonor our profession by doing our work in a slovenly way, careless about our appearance, unconcerned about our intelligence, but we should be proud of the occupation God first gave to man, and strive to keep it in the relative position that God designed it should hold, and by our energies and intelligence add dignity to labor. Now, while it is true on one hand that there is no place so well adapted to fill the mind with deep wholesome thoughts as in the country, where nature plays with the rippling brooks and clothes the trees and shrubs with beautiful verdure, and causes grass and flowers to spring up at our feet, and manifests itself in everything with which we have to do, making it impossible, I believe, for infidelity to exist in the heart of the tiller of the soil; on the other hand there is a peculiar fascination to the average farmer in his regular routine of work on the farm, an attraction springing from the soil or a certain something that creates a repelling force tending to drive out the desire for society and mental culture, the great essentials to success. When we find that our social desires are on the wane we should remember that only through society is good accomplished, and what we learn and practice in society will be a boon to us when in comparative seclusion on the farm. Sometimes we hear people complain, yea sometimes we ourselves complain, of our circumstances, of the laws of our country, of the people who hold the reins of government, of the chilling blasts, the biting frosts, and the scorching sun, the weather in general and the working of nature in the whole universe, until complaint leaves footprints upon the very countenance and the complainer becomes disagreeable to those around him. We are inclined to complain too much. As to the laws of our country we help to make them, or at least we should do so, and we have no right to complain of the laws until we have placed ourselves in the most desirable position to become effectual in their improvement. The opportunity is before us and if we fail to improve it we are to blame. Our legislators

desire to make the very best laws and please the greatest number of people. Our business should be to let them know what laws we as a body desire and they will recognize our wants and give us what we ask.

For this there are two requisites: First, we must study thoroughly our circumstances to know what we want that would not work injury to others; and, second, we must know how to ask for what we want that the legislators may know that the ground has been well surveyed and the request is just. Now, these things can only be attained through some form of organization, for outside of organization nothing is accomplished. All the laws enacted that directly benefit the farmer have been secured through the work and influence of an organized body of farmers, and where the farmer is directly benefited by legislative proceeding all other classes are indirectly benefited by the same, so while we are laboring to enhance the power, influence and wealth of the farmer we are lending aid to teeming millions that labor in the various callings of life, thus doing a universal good.

We may grumble and complain all we choose, but will accomplish little for the general good of all until we put our own shoulders to the wheel and become associated and connected in some way with some farmers' organization, one that is non-political, non-sectarian; and whose aim is to develop a better and higher manhood and womanhood, to enhance the comforts and attractions of our pursuits, to foster mutual understanding, and coöperation in all things essential for our greatest good.

It is not for a selfish motive we should organize, but that we may be in position to give more effectual aid in uplifting mankind and bringing all classes in closer union and harmony. A nation rises in importance and prosperity in proportion to the thrift and intelligence of the agricultural class of that country. One of the reasons why we should organize is purely educational, and while this feature is developing, selfishness and superstition will be driven out, two characteristics prevalent among farmers who do not mingle in society.

We are told that we shape our own destinies; if so, we are to blame for those things which cause us to complain. We are also told that labor and diligence conquer all things, and again we are cited to the old Russian proverb, "Misfortune is next door to stupidity." We do not believe that we are to blame for all of our misfortunes, but that by diligence and prudently planning our work many of our misfortunes would be averted and instead of disappointment and embarrassment we might enjoy prosperity and pleasure.

Many farmers sleep too little, some, too much, and some are never wide awake. Some work too much and some do not work enough. The up-to-date farmer is a business man, dispatches his work in a business-like manner, is systematic in his farming, receives new ideas wherever he can and puts them in use and is always ready for improvement. For the lack of interest and attention many of our Farmers' Institutes fail to accomplish as much as they should. I mention this because it is a prevailing fault among farmers to do things contrary to their own convictions, because it is a little inconvenient to do it right, and to move along in the customary way. We ought to be ready at all times to carry into execution every good idea wherever an opportunity affords. By precept upon precept, line upon line, here a little and there a little, we lay up a goodly store of knowledge, and by applying the same in our work and general business it will prove to us a source of profit.

We should encourage our children to stick to the farm, "the dear old farm." and try to make it as agreeable and attractive to them as possible, for in so doing many a young man and young woman may be saved from ruin. Many a farmer drives his sons from the farm by complaining of the hardships the farmer has to endure. He talks of farmers as a down-trodden class, whose occupation

is the lowest and humblest to which man is heir; he often fails to clothe his boys sufficiently to appear well in society, but keeps them digging from morning until night, day after day, from January to December, year after year, until, overburdened and disgusted, they are forced to leave the farm. They seek some other profession that looks very bright and dazzling in the distance, but alas! it may be said of it in the words of the disappointed poet,

"The lovely toy so fiercely sought,  
Hath lost its charms by being caught."

They try other professions but find there is no excellence without labor and that the pursuit of happiness and fortune will yield equally as much pleasure as the possession of the same.

We should improve every opportunity possible to make the home life of the boy and girl on the farm as agreeable as we can; giving them an interest in the work, taking them into society with us, teaching them that our vocation is subordinate to no other, thoroughly educating them for farmers; then, if they finally conclude to follow other professions, they will have a solid foundation on which to build, and our good work will not be dishonored but will bear fruit for generations to come.

## PREVENTION OF TUBERCULOSIS AMONG CATTLE.

By N. P. DAVIDSON, M. D., Hilliards, O.

[Read at the Farmers' Institute held at Hilliard, Franklin County, December 15 and 16, 1899.]

The mind of the general public is gradually becoming more and more awakened to the frightful death rate due to that grim monster, the "white plague," known to medical men as tuberculosis, and yet very appropriately termed consumption in common parlance. It is also known as phthisis or phthisis pulmonalis when located in the lungs and then catarrhal consumption as well as tuberculosis of the lungs is included. Tuberculosis is an infectious disease and is produced by the introduction into the system of a germ discovered by Koch, of Germany, in 1882, and known as the bacillus tuberculosis.

Infection may occur by one of four different modes: 1st. The disease may be produced by hereditary transmission and yet such instances are exceedingly rare, not more than nine or ten having been described in man. 2nd. The system may become infected by inoculation or by direct introduction into the blood of the virus or bacillus. This was demonstrated first by Villemin, in 1865, by experiments upon animals. This method of transmission does not often occur and is usually local in its effects. Handlers of hides from infected cattle, butchers, and demonstrators and students of morbid anatomy sometimes contract a local form of the disease when it manifests itself in the form of warts on the back of the hand. 3rd. The most common mode of infection is by the inhalation of finely pulverized particles of dried sputum and excretions from tuberculous subjects. 4th. A very common and most dangerous source of infection is by ingestion, or eating contaminated food. This is especially true of milk and beef from infected cattle. The disease develops so insidiously that little alarm is felt until the symptoms, with which almost all are familiar, are well marked. The cause of the malady is the same in both man and the lower animals, viz: bacillus tuberculosis, and therefore reciprocally communicative between man and animals. Among cattle, tuberculosis usually manifests itself by gradual emaciation, fever, occasional cough and frequently sores develop on the udders. When tubercles develop

upon the serous membranes in the pedunculated form, in cattle, the affection is known as pearl disease. While cases of consumption in man almost universally become emaciated, cattle may occasionally increase in flesh and show no outward signs of the disease.

The nature and progress of this common but fatal disease is so familiar to most persons that I shall omit further discussion of the subject here and proceed to speak of the prevalence of tuberculosis among man and the lower animals. This scourge of all nations has claimed more victims than all the wars and other plagues and scourges of the human race combined. About one-seventh of all the deaths in the world are due to this cause. During the last seventeen years over two million people on this continent have succumbed to its fatal ravages. During the ten years ending 1893 there were forty-one thousand five hundred and sixty-two deaths from the different forms of tuberculosis in Ohio, twenty-two thousand, seven hundred and sixty-two being females and eighteen thousand eight hundred males. From this we might infer that females are more extensively affected than males and yet in the general aggregate the opposite is found to be true.

According to a report on tuberculosis in New York City, made by Dr. A. R. Guerard to the Senate Commission, January, 1899, out of eighty-one thousand eight hundred and twenty-eight dwellings, deaths from this disease have occurred in the last five years in eighteen thousand seven hundred and seventy-one, or in nearly twenty-three per cent. There are fourteen thousand four hundred and seventy-nine houses in which there have been fifteen thousand five hundred and eleven deaths from this cause in one year. In the Fourth ward there are six hundred and sixty-three houses, holding eighteen thousand three hundred and twenty three persons, and in two hundred and forty-eight of the houses there have been five hundred and forty-one cases in three years. In the Sixth ward there are six hundred and thirty houses, containing twenty-two thousand eight hundred and ninety-seven persons, and four hundred and sixty-five cases were reported. In many houses the continued recurrence of tuberculosis is reported. It is trusted that the report will soon lead to some remedial legislation.

During the ten years, 1881 to 1890, there were in England and Wales two hundred and forty-six thousand four hundred and fifty-five males and two hundred and twenty-seven thousand five hundred and thirteen females who died of phthisis, showing an excess of males. During the last twenty years, in Cincinnati, Ohio, alone, out of a total mortality of one hundred and nineteen thousand and eighty-nine, there were seventeen thousand three hundred and fifty-three deaths from tuberculosis.

The annual tribute of the United States to this scourge is over one hundred thousand of its inhabitants, and each year the world yields up one million and ninety-five thousand, three thousand each day, over two each minute (night and day) of its population — as a sacrifice to this plague. Doctor David Paulson of Battle Creek, Mich., gives the following estimate: "One-third of all who die in the United States between the ages of fifteen and sixty die from tuberculosis. This disease alone is the cause of four and one-half more deaths than are caused by scarlet fever, smallpox, typhoid and diphtheria combined. In the United States five hundred persons die each day of consumption alone. There were thirteen thousand funerals resulting from this disease in the state of New York last year. It is estimated that there are one million two hundred thousand suffering from tuberculosis in the United States today, or practically one in fifty, the majority of whom, from human calculation, must go to their long home within a few months or years at best. The greatest plagues of antiquity bore no comparison whatever to these ravages, for they swept over the face of the earth like a tornado, weeded out the feeble and sickly ones and humanity was given a respite again. But this modern plague knows no beginning or end—



ing; its ravages increase as it gains momentum." Of the seventy million population of the United States, ten million must inevitably die of this disease if the present ratio is kept up.

While tuberculosis exists to a greater or less extent in all countries, yet for obvious reasons, it is most prevalent in large cities and in localities which are most densely populated. As for example, while the general death rate from this cause is 3 per thousand, that of Vienna is 7.7, and of Munich and Glasgow 4 per thousand. Geographical position has less influence upon its spread, doubtless, than has been supposed. England and Italy suffer alike and in the West Indies and the South Sea islands the disease is very prevalent. It is common in Canada, especially among the English and French Canadians, while it is rare toward the poles, yet altitude has a more potent influence than latitude. For example, in the high regions of the Alps and Andes, the central plateau of Mexico and in mountainous countries, as Switzerland, the death rate from tuberculosis is low. "No race is immune." "The Indians of the continent are very prone to the disease," and according to Matthews, whose experience with the native race is large, the disease is on the increase among them, and the death rate is enormous. The negro race is also very susceptible, more particularly to the glandular and osseous forms of tuberculosis.

#### DIAGNOSIS OF TUBERCULOSIS IN MAN AND CATTLE.

When tuberculosis is well developed, the physical signs and symptoms, such as gradual and progressive emaciation, fever, cough, expectoration, weakening sweats, etc., together with the presence of the tubercle bacilli in the sputum—render the diagnosis an easy task. But at this advanced stage the chances of cure are small. If, however, it were possible to diagnose the malady in its very incipency, then we would have good ground upon which to anchor our hope of a speedy and permanent cure. Sad experience has taught the medical profession that tuberculosis can be cured at a stage when only a small per cent. of cases can be positively diagnosed, and that it can be diagnosed with certainty at a stage when only a small per cent. can be cured.

When Koch immortalized himself by the discovery of the bacillus tuberculosis, in 1882, many thought that the early diagnosis of consumption was assured. But the germs or microbes are not found in the sputum, as a rule, before a breaking up of the localized tubercles and diffusion of their products through the system; nor are they always present in the sputum after this occurs. Later Koch made the very important discovery of Koch's lymph, now known as tuberculin. This is a brownish, neutral, albuminoid liquid, soluble in water and consists of a glycerin-extract (probably of ptomains) of the tubercle bacilli. It was used quite extensively for a limited time as a curative measure with varying and questionable success. But special interest attaches to its use as a diagnostic agent, and this is true more particularly in its use as a test in the inspection of cattle for tuberculosis. The tuberculin test is made in the following manner: The desired quantity of tuberculin is drawn from the bottle containing the same by means of a clean and dry pipette and placed on a clean and thoroughly sterilized dish; a small quantity (about one dram) of distilled water is poured through the pipette into the dish and mixed with the tuberculin: this mixture is then drawn into a hypodermic syringe and injected under the skin of the back between the shoulder blades. The temperature of the patient should be taken morning and evening for one, two or more days before the injection is made, so that the amount of increase of temperature can be properly estimated. A sufficient dose (about ten milligrams) should be used to produce the desired reaction. The patient is said to react to the test when a rise of one and a half degrees

to two degrees or more above the mean course of temperature, previous to the injection, occurs. The rise of temperature is the distinctive feature of the reaction, although some other general disturbances accompany the fever. This is a very brief and imperfect description of the tuberculin test as applied to human subjects. When used in cattle, of course, the dose should be much larger and the point of insertion may vary. Nor is it probable that the temperature would be taken prior to the test unless it might be made immediately before the insertion of tuberculin. Some good men object to the use of this test in man on account of the possible danger in its use, and yet it has its strong advocates.

A very important discovery has recently been made by a Dr. A. P. Jenkins of Chicago. He has discovered a new serum which, it is claimed, will show the presence of tuberculosis long before it would be possible by the microscope, the X-ray or other methods now in use. He claims that by means of it physicians will be enabled to diagnose the disease in its earliest stages and in time to effect a cure by good sanitation and plenty of outdoor exercise.

The tuberculin test is certainly of the greatest value in cattle, and thus indirectly of incalculable prophylactic benefit to mankind. It is not absolutely infallible and yet the evidence offered by the veterinarians is that 99 per cent. of cattle reacting are demonstrated to be tuberculous at autopsy, and no more convincing argument can be offered in favor of the value of tuberculin as a diagnostic agent.

#### PREVALENCE OF TUBERCULOSIS AMONG THE LOWER ANIMALS, BUT MORE ESPECIALLY AMONG CATTLE.

"Tuberculosis is one of the most widespread of maladies. It is rare in cold-blooded animals though present to a certain extent among some reptiles during the breeding period. It is extremely common among fowls although recent facts indicate that it differs somewhat from the ordinary form. It is distributed widely but unevenly among domestic animals. Bovines, or cattle, are more prone to the disease than other ruminants. It rarely occurs in sheep, though it is common in pigs, but not so common in this country as in Europe. In 1880 an inspection of one thousand hogs revealed only two cases, while at the Berlin abattoir in 1887-'8 there were six thousand three hundred and ninety-three cases of tuberculosis found among hogs slaughtered. Horses are rarely attacked, and while dogs and cats are not prone to the disease, yet a number of cases are given in which infection of pet animals has been produced from tuberculous masters. The disease is rare among semi-domestic animals, such as the rabbit and guinea pig, and yet these animals, especially the latter, are extremely susceptible when inoculated. Tuberculosis is unknown among apes and monkeys in the wild state, but in confinement it is the most formidable disease with which they have to contend." [Ostler.]

The wide spread occurrence of tuberculosis among bovines or cattle, however, is of special importance in this connection because we derive nearly all the milk and a very large proportion of the meat used for food from this class of animals. The disease is more prevalent in most old European countries, doubtless, than in the United States, and yet it prevails to a greater or less extent in all North America, Australia, South America, the islands of the ocean, and in fact wherever cattle are raised in any considerable numbers. The following list of reports and examples will give a general idea of the prevalence of tuberculosis among cattle in different countries.

"Of a herd of five thousand two hundred and ninety-seven cattle slaughtered in Maryland, only one hundred and fifty-nine were found to be tuberculous." [A. W. Clement.] "In the same state (Maryland) another herd of ten thousand were

examined and as a result one hundred and fifty or 1.5 per cent., were found to be infected." [National Stockman and Farmer, 1897.]

"Of a herd of fifteen thousand five hundred and six cattle slaughtered at the Brighton abattoir, Boston, only twenty-nine were tuberculous." [A. Burr.] According to the report of the Massachusetts Cattle Commissioners, in 1896, out of twenty-six thousand nine hundred and fifty-eight cattle examined in the state of Massachusetts by the tuberculin test, four thousand three hundred and eighty-nine were found to be tuberculous. The proportion found to be so affected at the slaughter houses, or abattoirs, however, was comparatively small, being only 1 per cent. This is accounted for by reason of the fact that these cattle so slaughtered were young and raised on pastures in the open air; they were shipped in from a climate where stabling was not necessary. Tuberculosis among cattle is alarmingly prevalent on the farms in the state of Massachusetts. "Of twenty-two herds, aggregating seven hundred and seventy-nine animals, three hundred and seventeen, or 40.6 per cent., were found to be infected." One fine herd of five cows, which supplied milk for children alone, furnished five infected animals. Out of another selected herd of fine appearing cows, sixty-four in number, sixty were infected, and milk from these animals was used for food.

"Tuberculosis seems to be especially common in herds of cows gathered near large cities in order to furnish milk to the inhabitants of such cities. At San José, California, of eight hundred and ninety-two cows tested with tuberculin, two hundred and twenty-five reactions or 25 per cent., was the result. At New York City two thousand one hundred and forty-seven tested gave four hundred and five reactions, 19 per cent. At Richmond, Va., out of a herd of one hundred and thirty-four, ninety-five reacted, 66 per cent. In Philadelphia, Pa., of two thousand nine hundred and seventy-five cows tested, seven hundred and ninety-five reacted, 20 per cent. At Watertown, N. Y., fifteen dairies of two hundred and eighty-one cows showed milk contaminated with tubercle bacilli, and two dairies in which no cows reacted, produced contaminated milk. It is said that 3.5 per cent. of the cows in New York are tuberculous. We have one herd of twenty-seven near Columbus, Ohio, of which eleven reacted, 40 per cent. Of six thousand three hundred cattle tested in 1896, in Connecticut, eight hundred and ninety-seven reacted to tuberculin and were destroyed, 14 per cent. Of one herd in northern Pennsylvania, out of one hundred and seventy-one cattle, one hundred and fifty were tuberculous, 90 per cent. Seven and a half years prior to this report this herd was sound. Six shorthorns which were coughing were purchased then, with the above-mentioned result. The average age of these cattle was four and a half years." [Jour. Comp. Med., April, 1897—Dr. D. N. Kinsman.]

"Between 1891 and 1898, one thousand eight hundred and forty-six herds were examined in New Hampshire (the number of animals not given), and one thousand four hundred and seventy-eight were found to be tuberculous on post mortem examination." [Extract from a report by Dr. Irving A. Watson, President Cattle Commission.]

"In Minnesota, of three thousand four hundred and thirty cattle tested, the following were found infected: Natives 7.8 per cent.; high grades, 10.8 per cent.; pure breeds, 16.6 per cent.; farm herds, 14.2 per cent.; city dairy herds, 10.4 per cent." [Bulletin 51, Veterinarian Department, University of Minnesota.]

"In seventeen different states, thirty-nine veterinarians, who had inspected one hundred and sixty-five herds, containing about three thousand animals, found five hundred and forty-nine cases of tuberculosis and two hundred and forty-two suspicious cases." [The Report of the Massachusetts Society for the Promotion of Agriculture, 1895.]

In a special bulletin of the Ohio Agricultural Experiment Station, at Wooster, November 14th, 1898, the following table is found:

Cattle examined for Tuberculosis in the United States and Canada:—

State.	No. Tested.	No. Condemned.
Alabama .....	18	4
Canada .....	314	98
Connecticut .....	2,032	349
Delaware .....	951	186
Indiana .....	312	7
Iowa .....	873	122
Kansas .....	80	15
Louisiana .....	22	6
Massachusetts .....	21,390	11,633
Michigan .....	608	77
Minnesota .....	3,430	380
New Jersey .....	805	134
New York .....	25,800	1,650
Ohio .....	107	38
Ontario .....	662	160
Pennsylvania .....	16,000	2,500
Rhode Island .....	*	2,043
Vermont .....	14,155	924
Wisconsin .....	30	28

It will be interesting to observe that of the eighty-seven thousand five hundred and eighty-nine or more cattle tested in the above tabulated states, twenty thousand three hundred and fifty-four or more than 20 per cent., were condemned. It may also be seen that many more were tested and condemned in the eastern than in the western states, New York, Massachusetts, Pennsylvania and Vermont leading in the list and in the order mentioned. This is accounted for by the fact that the test is more generally used in the east than in the west, and this is rendered necessary by reason of the large number of cattle shipped into the eastern cities.

"Of animals undergoing government inspection at various abattoirs at Chicago, Kansas City and St. Louis, a very small fraction of 1 per cent. were found tuberculous."

"Of fourteen thousand and fifty animals tested by the department of agriculture, eleven thousand five hundred and eighty-two were healthy and two thousand four hundred and sixty-eight (17 per cent.) were diseased. In Germany, according to Siedamgrotsky, in the state of Saxony (excluding calves), in 1888, 5 per cent.; in 1889, 9 per cent.; in 1890, 16 per cent. were infected. This would seem to show that tuberculosis is increasing, and though I do not doubt that this is so, these marked deviations in the number of animals found to be tuberculous are probably explainable more from the fact that the government meat inspection was gradually being more rigidly enforced than that the disease itself was increasing at this apparently alarming rate. Even in the thickly peopled German Empire tuberculosis is seemingly more prevalent in certain districts than in others. In the district of Argenmuende, for instance, among thirteen thousand cattle slaughtered, none were found to be tuberculous, and in the district of Teltow, among forty thousand head killed, only fifteen cases appeared."

"Dr. Ostertag's observations at the Berlin abattoirs show, on the other hand, that 25 per cent. of the adult cattle slaughtered there for human food are tuber-

\*Number tested not given.

culous in a more or less degree. Age plays an important part as to tuberculosis prevalence. Yearlings and under are rarely affected, but with every year of advancing age the chances of escape become less. Old milch cows (ten to fifteen years) are rarely immune. On an average, Ostertag found 75 per cent. of these old dairy veterans carrying scars of their battle with grim phthisis." [Prof. D. S. White. Address before the Ohio State Agricultural convention, 1897, per Dr. D. N. Kinsman.]

"For the years 1879, 1880, 1881 the percentage of infection at the abattoirs of Augsburg, Germany, was 2.38. There were four times as many cows as other beeves infected. During 1890 and 1891, twelve thousand cattle were slaughtered in England for contagious pleuro-pneumonia and one thousand four hundred and sixty-four or 12.2 per cent. were found to be tuberculous. In some of the herds inspected, 75 per cent. had tuberculosis." [Report of Massachusetts Cattle Commission, 1894.]

"Of fifty-one thousand four hundred and twenty-seven cattle slaughtered at abattoirs in Germany, 0.6 per cent. under six weeks of age were infected; 0.6 per cent. from six weeks to one year; 11.4 per cent. from one year to three years of age; 33.11 per cent. of those from three to six years of age; 43.4 per cent. of those over six years of age, thus further showing the increased prevalence according to age.

"In the Copenhagen, Denmark, abattoirs, from 1890 to 1893 there were slaughtered one hundred and thirty-two thousand two hundred and ninety-four oxen and cows, of which 17.7 per cent. were tuberculous; eight thousand two hundred and ninety-two swine, with 15.3 per cent. infected; one hundred and eighty-five thousand seven hundred and sixty-five calves, with but 0.2 per cent. infected, and three hundred and thirty-seven thousand and fourteen sheep, with but one infected. In the abattoirs of Berlin, for 1892-'93, there were slaughtered one hundred and thirty-two thousand eight hundred and seventy-four oxen and cows, with 15.1 per cent. infected; one hundred and eight thousand three hundred and forty-eight calves, of which one hundred and twenty-five were infected, and three hundred and fifty-five thousand nine hundred and forty-nine sheep, of which fifteen were infected." [From Report of the English Royal Commission on Tuberculosis, 1895.]

"In Prussia, in 1893, of six hundred and ninety-five thousand eight hundred and twenty-two cattle examined, 8.9 per cent. were found to be tuberculous; in Saxony for the same year, of six hundred and fifty-nine thousand eight hundred and forty animals examined, 18.3 per cent. of the adult animals were infected." [*Revue des Sciences Medicales.*]

#### DO HUMAN BEINGS CONTRACT TUBERCULOSIS FROM THE USE OF MILK AND MEAT FROM INFECTED ANIMALS?

Tuberculosis is most certainly communicated to man, especially children, by the use of milk from tuberculous cows, unless the proper precautions are taken to prevent it. It is possible, also, for man to contract the disease from the use of beef from infected cattle. If milk is thoroughly Pasteurized, sterilized or boiled while fresh, the danger of infection is reduced to a minimum, and if beef is thoroughly cooked the danger is almost nil.

In support of the above view of the noxious influence of milk from tuberculous cows allow me to cite a few of the highest authorities.

"A more common mode of infection, especially in children, is probably by the way of intestinal glands, from the ingestion of the milk of tuberculous cows. That the tubercle bacillus is frequently, if not usually, present in the milk of

tuberculous cows has been proved by the experiments of Bollinger, Hirschberger, Ernst and others." [Sternberg — Manual of Bacteriology, p. 391.]

Crookshank, in his work on "Bacteriology and Infective Diseases" (4th edition, p. 395), agrees that children may contract tuberculosis by using tuberculous milk, and says, "The milk of cows suffering from tuberculosis should undoubtedly be rejected."

"The danger of drinking unboiled milk appears very great, and it is the duty of every sensible physician to strictly forbid the use of unboiled milk, especially with children." [Fraenkle's Bacteriology, p. 241.]

"Cattle are very frequently the victims of tuberculosis, which is caused by the same germ (bacillus tuberculosis) as the disease in man. As the living tubercle bacilli may be contained in milk from diseased cows, it appears that here is an important source of danger." [The Story of the Bacteria, by Prudden.]

"We have obtained ample evidence that food derived from tuberculous animals can produce tuberculosis in healthy animals. In the absence of direct experiments on human subjects, we infer that man also can acquire tuberculosis by feeding on materials derived from tuberculous animals. As to the proportion of tuberculosis acquired by man through his food or through other means, we can form no definite opinion, but we think it probable that an appreciable part of the tuberculosis which affects man is obtained through his food." [Report of the Royal Commission on Tuberculosis, England, part 1, p. 20.]

Prof. Adami, in an address before the Canadian Medical Association, August, 1899, said that from the number of cases which occurred during the milk-drinking period of life, he feels satisfied of the intestinal origin of tuberculosis. [Quoted by *Pediatrics*, Nov. 1899.]

Dr. George F. Still, Assistant Physician for Diseases of Children, King's College Hospital, England, in an address before the British Medical Association last August, reported that his records of seven hundred and sixty-nine consecutive necropsies on children under twelve years of age resulted in finding evidences of the tuberculosis in two hundred and sixty-nine. He does not consider, however, from the result of this examination, that milk is usually the source of tuberculosis in children, "perhaps owing to the precautions taken in boiling, sterilizing, etc."

#### EFFECTS OF BAD SANITARY ENVIRONMENTS IN PRODUCING TUBERCULOSIS IN ANIMALS.

The unsanitary conditions found to prevail in the ordinary dairy barn or stable are most conducive to the spread of tuberculosis. Indeed, this is the principal cause of its existence and spread among cattle. In the winter season, especially in cold climates, the yield of milk rapidly diminishes when cows are kept in a temperature below 65 degrees, Fahrenheit, and as artificial heating of stables is rarely resorted to, this temperature is furnished by the heat of the bodies of the animals confined in the stables, and in order to accomplish this it is necessary to close up the stable tightly, thereby cutting off the supply of pure air and sunlight, which is so essential to the health of the animals. Many observers have demonstrated the effect of sunlight in destroying the bacillus tuberculosis, and the custom of keeping dairy cows in a dark stable is, therefore, a bad one, because it greatly favors the development of the tubercle bacilli. It is well known, too, that a lack of cleanliness is also a most potent factor in the production, not only of tuberculosis, but of all other diseases. In support of the above statements, most writers cite what is said to be a fact, that tuberculosis of animals is not common among those on the western plains that are kept continually out of doors.

Dr. Irving A. Watson, President of the State Board of Cattle Commissioners of New Hampshire, makes the following statements on this subject: "As the most efficient means of preventing the spread of tuberculosis, the conclusion has been forced upon us that sanitation must rank first. Whenever we have found tuberculosis to exist extensively in a herd of considerable proportions, we have invariably found one or two conditions in connection therewith, to-wit: That the animals were stabled in close quarters, with an entire absence of proper ventilation and cleanliness, thereby maintaining an atmosphere so warm that the temperature rarely reached the freezing point in mid-winter; moist and charged with the effete stable products, thereby creating the very best possible conditions for the tubercle bacillus and its diffusion among animals. Or, second, a degree of in-breeding among some of the thoroughbred herds that in all probability impaired the powers of resistance and rendered these animals particularly susceptible to infection.

"It is a very common occurrence to find stables constructed with a deliberate purpose, to retain the animal heat, without any attention to ventilation or other sanitary conditions. Under such circumstances, once infection is introduced into the herd, even though the diseased animals are destroyed as soon as discovered, disinfection of the stables sufficient to destroy the germs is next to, if not quite, an impossibility. The remedy lies, therefore, in educating the farmer and stock raisers along these lines, and to show them that the best protection they can give their herds, not only against tuberculosis, but against other diseases from which cattle occasionally suffer, lies in sanitation.

"We believe that if particular attention were given to the sanitary construction and care of stables, the danger from the spread of the disease in a given herd, even though a tuberculous animal were in it, would be relatively small. This premises a stable in which there is sufficient cubic space per creature, with ample ventilation, light and dryness, all of which conditions are attainable in most localities. With stables kept in a thoroughly clean condition, frequently swept and washed, and with the addition of some disinfectant, and the segregation or isolation of animals discovered to be diseased, we believe the spread of tuberculosis would be practically *nil*." It is also highly important that pure and wholesome food and water should be furnished and musty hay or fodder as well as stale and fermented slops from breweries and other sources should be rejected. The general principles of prophylaxis (or prevention) and treatment apply alike to diseases in man and the lower animals. I shall not attempt to give specific plans for the construction of cow stables further than to say that they should be built so as to meet the needs above indicated. There should be glass windows to afford ample light, and the matters of ventilation, ample space for each animal, and cleanliness should be kept in view. If possible, means of artificial heating should be provided, either by means of a steam or hot air apparatus, so that a temperature of about 60 degrees Fahrenheit can be maintained in the winter season. With such provisions the increased yield of milk will soon defray all extra expense and also guarantee a good dividend in profits. In the District of Columbia, and many European countries, definite models and plans for cow stables are prescribed by law. We should not allow ourselves to be outdone in this matter because sanitation is the *essential factor* in combatting the spread of tuberculosis, since without it, all other measures, such as isolation and slaughtering tuberculous animals, can only meet with partial success at best.

On the whole, any measure taken to prevent, and, as we believe to be possible, finally eliminate tuberculosis from among cattle, will also protect them against other diseases to which they are subject.

It occurs to me that no argument is needed to convince intelligent stockmen that the prevention of tuberculosis among their cattle would be of great financial

profit to themselves. On the aggregate an immense amount of feed is annually lost on diseased cattle, because, as a rule, such cattle will not thrive and grow like healthy animals. The prevention of tuberculosis, not only in cattle, but in man as well, is demanded in the interest of public health. "State and local authorities should combat in every possible way the predisposing causes of the disease, leaving mainly to attending physicians the proper care of patients to prevent infection." We already have some good laws on the matter of inspection, etc., but they are not enforced to any great extent because of a lack of proper public sentiment behind them.

There is no subject of greater importance to humanity than that of the suppression and final elimination of tuberculosis. On the part of the Ohio State Board of Health-I most earnestly solicit the active coöperation of the Association in our efforts to guard and shield the people, and especially the children of our country, against the appalling ravages of this terrible plague. Help us to agitate the subject until public sentiment will demand further restrictive measures on the part of our legislature. We feel assured that your very much needed aid and support will be liberally granted.

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## TUBERCULOSIS IN CATTLE AND ITS PREVENTION.

By J. FRANK KAHLER, Canton, O.

[Read at the Farmers' Institute held at Navarre, Stark County, January 17 and 18, 1900.]

The secretary of the State Board of Health, Dr. C. O. Probst, has asked me to write a paper on tuberculosis, that is, on its prevalence among all domestic animals, as well as in man; its infectiousness; its danger to property and life and the good we may accomplish toward prevention by a united effort.

Tuberculosis, consumption, or phthisis (all meaning the same thing) is a disease due to a very small germ or micro-organism, thread-like in shape, so small that it takes three thousand five hundred placed end to end to make one inch in length. These minute bodies have distinct lives and constitute living organisms, the same as human beings; they propagate their own kind and multiply very rapidly, when the temperature and soil are favorable; the soil best adapted to their growth is in the tissues or bodies of warm blooded animals, with a temperature of one hundred degrees or a little above. The human family and all domestic animals furnish excellent soil for these germs. When they find lodgment in the body, they grow and multiply, and this growth and multiplication is at the expense of the animal tissues; for nothing, not even a human being, can live except from the support derived from the life of other bodies (animal or vegetable, or both). Therefore, where there is life there must also be death, and where there is death there must be decay, that is, disease, and where there is life there is waste; now, this waste is always poison to the animal or germ from whence it came. As an example: We breathe in oxygen and breathe out carbonic acid gas. Were we to re-inhale this poison—carbonic acid gas—but fifteen times, it would mean death to us; this gas is waste matter. So these tubercle bacilli, or germs, give off waste in their economy of life, which waste causes the rise of temperature in all animals which house them, and with a rise in the temperature up to one hundred and one or one hundred and two degrees the germs are in pastures green and thrive, grow and multiply still more rapidly; it is now but a short time until they are masters and the disease will soon take the life of the host. Such, then, is what we call consumption, or tuberculosis.



This germ, or disease if you please, may attack any tissue of the body, muscle, bone, skin, lungs, bowels, brain, glands, etc., of man, cattle, horses, sheep, dogs, cats, swine, etc., man most because he is housed up most. This subject is too long for us at this time to take up the question of tuberculosis in man, which kills one-seventh of all people born, so we will spend a few minutes discussing the relation of tuberculosis to the lower animals, especially cattle, for this concerns us a great deal from the fact that we derive the nearest perfect food—milk—from this source and all cattle so afflicted depreciate in value or are a total loss.

The only way to approach an extermination of this deadly enemy of ours is to strike the cause and the cause is the tubercle bacillus. This has been conclusively demonstrated thousands of times by taking the germs from a diseased animal and injecting the same into the tissues of a sound animal, which will produce a typical case of tuberculosis, just the same as if you take some wheat raised in a field, and sow it or inject it into a field which had no wheat at all before; it will now grow wheat the same as the original, and if this process is repeated sufficiently often on the same field it will not be long until the soil has been so depleted that nothing can be grown on it. The crops have killed the soil or field. So the germs kill the animal and, what is worse, the animal cannot be revived or restored again while the field can be again fertilized.

A case of great interest is given to show how rapidly the disease can be acquired and run its course. A six weeks old babe, showing no signs of any disease, wasted and died within five weeks. Tubercles with many bacilli were found in the lungs, on the pleura, in the liver and kidneys. The mother and father seemed free from tuberculosis and other diseases, and so hereditary origin of the child's disease appeared wholly excluded. On investigation it appeared that when the babe was nine days old the mother carried it to the house of a brother-in-law and for eight days the child remained in the same room with this patient, "a consumptive," who coughed much and whose sputa were allowed to dry and to be reinhaled again and again. The child was there all the time, the mother only at night. At the expiration of the eight days they removed the child to other quarters where no infection of tuberculosis existed and yet the child died as above stated.

I have made the statement that one out of every seven deaths is due to tuberculosis; this rate is not so high in cattle and other of the lower animals; but from tests made with tuberculin, we find that 12 per cent. of all cattle east of the Mississippi river is afflicted with tuberculosis. I must not pass this subject of tuberculin without giving you some idea as to what it is and what it does. It is the effete product of, or perhaps rather an extract derived from, these tubercle bacilli, which is called tuberculin. Now, if we inject under the skin of cattle a dram or more of this tuberculin, it will invariably produce a marked rise of temperature within from twenty-four to forty-eight hours if the animal has the least trace of tuberculosis; if, however, the animal is wholly free from tuberculosis there is no rise of temperature, whatever. The above test is a delicate one and is as reliable and scientific as mathematics itself. Whatever tests are made on cattle for consumption, are made in this way. There need be no fear that tuberculin, properly used, will cause generalization of pre-existing disease, neither will it cause the development of a new disease.

The actual amount of tuberculous disease among certain classes of food animals is so large as to place man in frequent danger of contracting tuberculous disease through his food. As to the proportion acquired in this way or through other means, we can form no definite opinion, but we think it probable that an appreciable part of the tuberculosis that affects man is obtained through his food. The circumstances and conditions with regard to tuberculosis in the

food animal, which lead to the production of tuberculosis in man are ultimately the presence of active tuberculous matter in the food taken from the animal and consumed by man in a raw or insufficiently cooked state. Tuberculous disease is observed most frequently in cattle and swine. It is found far more frequently in cattle full grown than in calves, and with much greater frequency in cows kept in town cow-houses than in cattle bred for the express purpose of slaughter.

Tuberculous matter is but seldom found in the meat substance of the carcass, it is principally found in the organs, membranes and glands; there is reason to believe that, when present in meat sold to the public, it is more commonly due to the contamination of the surface of the meat with material derived from other diseased parts than to disease of the meat itself. The same matter is found in the milk of cows when the udder has become invaded by tuberculous disease and seldom when the udder is not diseased. Tuberculous matter in milk is exceptionally active in its operation upon man or animals fed either with the milk or with dairy produce derived from it. No doubt the largest part which man obtains through his feed is by means of milk. The recognition of this disease during the life of an animal is not wholly unattended with difficulty unless the tuberculin test is applied. Happily, however, it can in most cases be detected with certainty in the udder of milch cows. The symptoms of tuberculous udders are: Small nodular masses or ulcerated patches which are slow in healing; milk with less butter-fat than formerly, and the impossibility of keeping the cow in as good weight as formerly; she becomes lazy and her coat of hair dull in color; such an animal should be killed at once.

There are two ways by which we may make life miserable for or exterminate these pesky germs. First, by heat, and second, by light and ventilation. A temperature of 212 degrees for fifteen minutes effectually kills them, but we cannot boil our cattle for this would kill them also. If, however, there is any suspicion as to milk infection we can boil the milk. Light and ventilation we can give our cattle. It is a very rare thing to find tuberculosis in herds west of the Mississippi because they have there plenty of light and ventilation, not being stabled as a rule except in the cities; but in the eastern sections and in cities where the animals are frequently stabled in close quarters, with an entire absence of proper ventilation and cleanliness, thereby maintaining an atmosphere so warm that the temperature rarely reaches the freezing point in mid-winter; moist and charged with the effete stable products, the very best possible conditions for the tubercle bacillus and its diffusion among the animals exist. Again, a degree of inbreeding among some of the thorough-bred herds in all probability impairs the powers of resistance and renders these animals particularly susceptible to infection. It is a common occurrence to see stables constructed with a deliberate purpose of retaining the animal heat, without any arrangement for ventilation or sanitation. If infection is once introduced in such a stable it is next to impossible to disinfect so as to destroy all the germs. I believe that if proper care in constructing our stables was regarded, the danger from the spread of the disease in a herd, even though an infected animal was in it, would be very small. This means a stable in which light is admitted from points where the sun shines, with points of ventilation above a level with the animals, with plenty of floor space, with tight floor, frequent cleaning and occasional disinfecting.

The danger of meat conveying disease has been recognized since Moses forbade the use of certain meats, but only in recent years has the subject become of especial interest to the public and to veterinarians. Several causes have contributed to this, chiefly the discovery of the tubercle bacillus by Koch in 1882. The extent of the live stock industry in the United States caused the subject to be of great interest here. Veterinarians discovered that herds of cattle chosen

with the greatest care, and considered from appearances to be in absolutely perfect health, were in many instances riddled with tuberculosis. Dr. D. H. Gill says: "Some herds of cattle in the vicinity of New York City showed tuberculosis in as high a rate as sixty per hundred. In many instances the diseased animal was to all outward appearances in perfect health. The disease could be transmitted from animal to animal, from man to animal, or from without. The infection could come through the respiration, through the food, and through objects licked by the animal. The infectious agent, when derived from without, had come from the discharges from the nose, mouth or bowels, or from milk. Of infected cattle probably one-half had become infected by inhaling bacilli in the air, and a large proportion from taking bacilli in the food."

Therefore I close with this summary:

*First.* It is a large money saving, as well as life saving work, for us to separate the infected from the non-infected cattle.

*Second.* It is not dangerous to the life of cattle neither is it expensive, and yet it is certain in its diagnostic value, to apply the tuberculin test.

*Third.* The milk from cows with tuberculous udders is extremely dangerous and milk from tuberculous cows with healthy udders *may* be dangerous.

*Fourth.* It is for the public good that all tuberculous cattle should be condemned; therefore the public should share in the loss.

*Fifth.* If we build wisely we will build sanitary stables.

*Sixth.* Tuberculosis among cattle is as highly infectious as in man, but cattle are perhaps not quite as susceptible to the disease.

PROCEEDINGS  
OF THE  
STATE FARMERS' INSTITUTE

Held in the Council Chamber, City Hall Building, Columbus, Ohio,  
Tuesday and Wednesday, January 9 and 10, 1900.

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The State Farmers' Institute convened at the Council Chamber, City Hall Building, Columbus, Ohio, Tuesday, January 9, 1900, at 10 o'clock A. M.

After calling the Institute to order, Mr. John Begg, Columbus Grove, Ohio, said:

*Gentlemen of the State Farmers' Institute:*—The hour has arrived for us to begin the program of the forenoon. However, before beginning, I think a word of explanation is necessary. Our honored Secretary, Mr. W. W. Miller, is necessarily absent this morning. He is not very well for one reason, and another reason is a rush of business in his office at this time, which keeps him from attending this morning's session. You have probably noticed on the printed programs which have been sent out that my name appears as President of this Institute. This was an unfortunate mistake, made in the rush of business in the office during the making up of the program. I make this explanation so that the members of the Institute will know that there was no intentional disregard of anybody, for we may congratulate ourselves, as well as the Secretary, that very few mistakes have been made in the execution of the work of that office, especially considering the amount of work performed.

Mr. George E. Scott, of Mt. Pleasant, was, as the records show, elected President of the State Farmers' Institute last year, and I was elected Vice President. With this explanation I now have the honor, ladies and gentlemen of the State Farmers' Institute, to introduce to you your honored President, Mr. George E. Scott of Mt. Pleasant, Ohio. (Applause).

President Scott:

*Fellow members of the State Farmers' Institute:*—I certainly appreciate the explanation which Mr. Begg has made to you this morning. I take this opportunity of congratulating you upon being so well entertained last year under Mr. Begg's leadership, and will say that I am glad to be with you this year, and feel honored in being selected as your presiding officer. Last year I was detained at home on account of sickness which kept me there for some length of time. I am glad to be able to be with you this morning and will undertake to preside over your deliberations to the best of my ability.

President Scott then read the following:

#### ADDRESS OF THE PRESIDENT.

Once more we have been privileged to meet in this, our capital city, as a State Farmers' Institute. For years this same pleasant episode has been enjoyed by the farmers of Ohio. Truly, after the burdens of the year have come and gone, who has a better right to come face to face and discuss the many phases of farm life than those who till the soil?

The past twelvemonth has doubtless been one of prosperity to most of us. Prices may not have reached a satisfactory point, but who can complain that the hand of Divine Providence has withheld from us the just reward of our labor in basket and in store. That we are a great agricultural nation has been demonstrated beyond the doubt of the whole world, which is continually reaching out after our products each year with greater eagerness and exchanging for our various crops its gold. Industries are springing up in a way that foretells a period of prosperity that most of us have never known. Cities are busy in a constant strife for greater trade and local improvement, with higher aims to secure better moral government.

The general government, having just passed through an expensive war and taken upon itself new responsibilities has been able, with but little effort, to raise not only enough revenue to pay her entire expenses, but to add a surplus to her treasury though she pays out many millions daily. The bulk of traffic moved from one sea board to the other keeps our railroads constantly engaged in an effort to move the enormous accumulation of freight that is thrust upon them to handle. Everywhere all over the Union myriads of human creatures are to be seen moving from one point to another; steam and motor cars are packed day and night with people pushing to and from their labor or seeking pleasure or recreation.

These teeming millions must be fed, clothed and cared for in a multitude of ways and the soil must produce it all. The chambers of commerce depend upon the farm and its multiplicity of products to deal upon, either in their actual or ethereal values. Every circle of commercial traffic looks with jealous eye upon what we are doing, noting carefully whether or not we are pushing our vocation as a united industry, or as a divided house, torn asunder by jealousies, or in a destructive apathy.

Deep laid plans by moneyed corporations uniting in trusts to control prices both of manufactured products and paid labor seem to threaten the future of every laboring man, be he farmer, mechanic or miner, and the notice taken of the situation by our leading politicians and advocates of political reform testifies overwhelmingly that there is danger ahead. No class will be more affected

than farmers by the growth and constant encroachments of these absorbing, ever sapping, barnacles; affected because of unsatisfactory organization which fails when and where opportunity affords the greatest power to evade these parasites. These trusts are fortified, intrenched and armed with weapons more dangerous than Mauser rifles and quick-firing guns, and should be captured and bound before they absorb the life of our glorious Republic. Capital should have its rightful and legitimate profit for its investment, but should never be allowed to become the oppressor of those who labor to make it a possibility. As a convenience and as a servant of our people it is the greatest interchangeable commodity that we possess, but if made by the few a means of enriching themselves, of becoming multimillionaires by oppressing those who labor, then we should take legal steps to rob the oppressor of his giant power, to hold him within the scope of a benefactor instead of allowing him to dwarf the nobility of labor and ultimately destroy our best and beloved free institutions.

To do these things there need be no riots, no bloodshed, no standing armies, nothing greater in power or grander in inspiration than the freemen of this country standing at the ballot box, unbiased, sober, honest and intelligent, ready to fulfill an obvious obligation toward God and country. Until the farmers of the Union come to full comprehension of this obligation and stand together for their rights, unbiased and untrammelled by political chicanery, they may never expect to see their interests fostered in a nation that is and must always be largely agricultural. Already there are organizations that have, to a large extent, ameliorated the wrongs that we have endured, and these organizations stand ready to honor the grand army of those who hold the plow, only asking their support as a body that the splendid work of elevating the dignity of agriculture may go on.

Markham may have overdrawn his picture from Millet's, "The Man with the Hoe," for this the last days of the nineteenth century, as viewed from our American standpoint, but who of us can foresee what the situation may be at the close of the next century should we for an hour neglect the golden opportunities that wait at the open door to magnify and enlarge the first vocation allotted to man.

Kings and potentates may have, through oppression and even bondage, "Slanted back this brow" and by its humiliation dwarfed the manhood that God intended should shine as his proudest creation, but who in this country, the first of all nations, where "the man with the hoe," or the man at the forge, has presided over its destinies as the first choice of its people, dares to take from honest labor a single honor or detract the dignity of the highest type of true manhood. It has been tried, but with the result of rousing the oppressed to a sense of their danger and crushing every effort made to bind the hands of the employed, and whenever we make legitimate demands, backed by patience, sound judgment and practical knowledge of what we want, no power can prevent their attainment.

The meeting of this Institute means much for agriculture, much for the farmers of Ohio. Those who hold the work of the farm and home dear to their hearts are here to give their best efforts on the program and in the discussions of timely subjects.

The Farmers' Institutes of this season bid fair to eclipse those of other years, for the farmers are rallying to the standard everywhere. The more remote fields of our rural districts are being reached, proving that rotation inspires a healthy, vigorous development whether it be on the farm or in our state institute work. Two hundred and fifty-six institutes have been provided for, six more than last year, yet this does not satisfy the people who are holding and preparing to hold many independent ones, using their own resources to maintain them. They

have realized that to secure a healthy condition there must be no retreat. If agriculture is to be honored as the leading industry of the incoming century, around which others shall revolve, we must with indomitable energy push the great work ahead of us, seeking with unyielding zeal the development of our as yet half realized resources.

The increasing demand for products from the farm from fast multiplying centres of population claims our closest attention. Increase of acreage for production over that of the past cannot be longer expected as the occupancy of public lands is growing less each year; hence if the rapidly increasing population of the world is to be fed the time has fully come when the occupant of the farm must know more of the correct principles of farming and how to apply them. To obtain them he must study and be taught; these facts, as they present themselves, come with greater force to us all. Any relaxation in this great work means that production must decrease as soil fertility diminishes. This means that our farms must be better tilled, their acres must yield greater crops or the people in our increasing hives of industry must go hungry. The outcome is not difficult to see. The farmer must know more about agriculture and the grand principles involved, or he must fail to meet the demands that the future makes upon him.

President Scott: The next address upon the program is by a gentleman with whom I am acquainted only through reputation and through literature. That gentleman has attained some fame as "the weather man," and is the gentleman who largely runs the weather in the state of Ohio. Considering the beautiful weather we have had for the last two or three days I should judge that he has been running it to the satisfaction of all parties concerned. I refer especially to yesterday and today. I now have the honor of introducing to you Mr. J. Warren Smith, Section Director, Weather Bureau, Columbus, Ohio.

Mr. Smith then addressed the Institute as follows:

*Ladies and Gentlemen:*—I am perfectly willing to be introduced as "the weather man" of Columbus on a day like yesterday or today. The subject to which I shall call your attention, for a few moments, is

#### \*FROST WARNINGS AND PROTECTION FROM FROST.

In this latitude the general direction of motion of the great air currents, for several miles above the surface of the earth, is from the west toward the east; hence all our weather changes come from the west and pass on toward the east. In this general air current, low pressure areas or whirlpools of air are continually being formed which move along with the general current. As the pressure is low at the center there is a general movement of the surrounding air in toward that center from over an area of from five hundred to two thousand miles in diameter. Because of the revolution of the earth the air does not move directly toward the center of lowest pressure but turns to the right, and thus moves around the center from the right toward the left or opposite to the movement of the hands of a watch. These areas move across the country at an average rate of twenty-five miles an hour taking about three days to pass from the Rocky Mountains to the Atlantic coast. As they pass across the central part of our country, the winds from the south blowing in toward the center are warm and moisture laden; those from the north are cold and dry and the

mingling of the two, and the cooling of the southerly winds as they advance northward and upward, causes condensation into clouds and usually into the larger rain drops, until we have the well defined storm or cyclonic area moving slowly across the country, with different weather conditions on different sides of the center. If the center of the storm area passes to the south of our location, we will get the colder, northerly winds and, if it be in winter, usually, snow. If it passes to the north it gives us southerly winds, warm and moisture laden, shifting to westerly with snow squalls or wind squalls and falling temperature — a cold wave in winter or a cool wave in summer. In any event the contrast between the southerly and the northerly winds is well marked, and, if in fall or spring, presages conditions favorable to frost formation. This cool wave is called the anticyclone in contrast to the cyclone, and seems to represent the returning wind or air, which has risen in some cyclonic area. This descending air is generally clear and clean, dry, cool and invigorating. But, however sharp the change from the warm to the cold winds or however disagreeable are the blustering, squally winds of the cold wave, our lowest temperature does not occur in them, but instead in the quietly descending air at the center of the anticyclone; and it is under the last named conditions that our late spring and early fall frosts occur.

Frost is formed when dew is deposited at or below the freezing point of water, and it is true that the temperature may be below freezing at the surface of the plants or ground, while only a few feet above the ground it is five to ten degrees above freezing. Heat radiates from all bodies, and in the clear, nearly still nights of the anticyclone, the heat which the earth and objects upon it have gained by direct sunlight through the day, is lost rapidly by radiation at night. Cold air is heavier than warm, and it is a poor conductor of heat, hence a very thin layer of air over the surface of the plants and ground may be below freezing, while the great mass of air immediately above is several degrees warmer, but the two necessary conditions for this result are a still night so that the air will lie quietly with the cold air at the bottom and the warmer air above, and a clear night so that heat will radiate rapidly from the earth. No one fears a frost when there is considerable wind or when it is at all cloudy, even though the clouds be high and thin. Clouds are simply visible moisture in the air and it is true that invisible moisture will greatly check the radiation and prevent a frost sometimes when, so far as one is able to notice, the conditions are favorable for frost. The evaporation of moisture from the surface of plants aids in the frost formation. The cooled air in valleys and lowlands lies still and gets colder and colder; but on hillsides being heavier as it cools it slides<sup>1</sup> slowly down into the valleys, increasing the area and extent of the cold there and lifting up the overlying warmer air, which in turn flows horizontally to take the place of the colder air that has descended. This movement of air accounts for the fact that oftentimes much damage is done in the valleys while the surrounding hillsides have escaped. The successful grower of fruits and tender vegetables must have his movement of the air in mind, when he is locating his lots, and place them on the side hills or ridges, and let the hardier plants take the lowlands. As the movement of air over bodies of water increases its moisture, tender plants should be located to the leeward of bodies of water whenever possible.

With the above conditions in mind, then, it follows that to artificially protect crops from frost we must apply one or more of these principles or a combination of them, viz.: Keep the air in circulation so that stratification cannot take place: prevent or check radiation of heat by actual covering of the crop, or by forming a cloud or smudge over the fields or around the orchards, by adding heat to the air, or by adding moisture to the air and so raising the dew point.



Covering can be resorted to on a small scale by hay or straw, over garden plants or around trees and bushes, or by throwing dirt around trees or over small potatoes, but it is not practicable over any considerable territory. A circulation can be maintained by setting several large or a greater number of small fires about and in the fields. In California it was found practicable to add heat to the air by the means of wire baskets of coal. About twenty-five to fifty baskets to the acre were placed in the orchard at a cost of five dollars per acre. These were lighted during the latter part of the night and kept burning at an expense of two to three dollars an acre. This will raise the temperature several degrees. In Ohio, where coal is so cheap, this plan should be thoroughly practicable and economical.

The burning of damp fuel adds both heat and moisture to the air, and is apparently the most practical of all in some sections. Stable manure may be piled up in different parts of the field or orchard or placed in sacks and scattered about in rows about one hundred feet apart. It should be dampened and then fired, when needed, by the use of coal oil. These piles or sacks will burn with a smoldering fire for several hours. One gentleman in California used bales of wet straw. An excellent plan seems to be to arrange for a smudge on some vehicle that can be moved about the orchard or field. The fire can then be moved to the section where most needed, the loss of heat by an upward draft is prevented, and there is a much more uniform distribution of heat and moisture through the lot. One device is to stretch chicken wire over an old sled or wagon body, cover it with damp straw or stable manure and set a fire underneath, after protecting the floor of the body with loose dirt. A barrel of water should be carried on the sled to keep the straw wet.

It is often said that each state and each town has a climate of its own, but it is true that, in the matter of frosts not only each town, but each man's farm and each ten-acre lot on it must be studied separately, but it is well worth attention, and if those present today are not getting the weather forecasts and warnings of the Bureau, they should take immediate steps to secure them. Our system is very complete for distributing the information and we can reach practically every section of the state, either by mail or wire, at government expense. We wish to urge farmers' clubs to take the matter up in a systematic way during the coming season. Discuss the plans at your meetings; write the Columbus office for suggestions and publications and for the warnings. It has been demonstrated fully and completely that the Weather Bureau can and will issue frost warnings from twelve to thirty-six hours in advance of a frost which will occur over any considerable area, and it has been demonstrated that orchards, gardens and small fields can be effectively and cheaply protected, and it certainly will pay to take some steps to insure the safety of a crop that is liable to be entirely destroyed in a single night. The suggestions given here are just as effective and just as important for the small garden plot as for the larger fields.

Protection of crops from frost, irrigation, the preservation of our forests and the protection of our insect eating birds, are all problems that the farmers and orchardists of Ohio must meet and must solve.

President Scott: You have been addressed in a very intelligent way by a very able gentleman along lines which naturally interest the farmer and the fruit grower. The gentleman undoubtedly is eminently qualified to answer all questions which you may want to ask him, and you are also at liberty to discuss the subject yourselves to a limited extent. We will now have inquiries and discussion upon the subject referred to.

While I see a large number of persons here today whose faces are

familiar to me, yet there are a number of the members of this Institute with whom I am unacquainted. I will, therefore, request that when you address the Institute, or have any inquiries to propound, that you first announce your name, and the county in which you reside, if I am unable to recognize you. In speaking on any subject which may be under discussion let us use our time economically and to the best advantage. Gentlemen, the subject is now before you.

Mr. F. G. Pontius, Franklin county: Mr. Smith has told us about the building of fires and the use of smoke, for the prevention of frost. I would like to inquire whether he keeps that up all night or only a part of the night?

Mr. Smith: The latter part of the night is usually the time when crops are most affected.

Mr. Pontius: I would also like to inquire when frost usually forms?

Mr. Smith: The lowest temperature invariably is just before sunrise. On a still and clear night the lowest temperature is reached just before sunrise, and frost forms with the temperature falling to freezing, or a little below, on the surface of the plant. You find the frost occurring late in the night just before sunrise, and it is at this time that precautions should be taken, especially, to protect crops.

Mr. Pontius: Another inquiry I would like to make. When frost has formed is there any way of sprinkling water over the plants before sunrise so that it would do any good in the preservation of the plants?

Mr. Smith: It has been found by experiments in California that the sprinkling of plants before the sun has come to them will prevent the damage to a great extent.

Mr. Pontius: Another point I would like to inquire about. I have noticed an instance where there was five degrees difference in the mercury between a point south of Columbus and a point one hundred and twenty miles north of Columbus, and that it was colder at the southern point than it was at the northern. I would like to inquire why that was and what was the reason for it?

Mr. Smith: Over how large a territory do you mean?

Mr. Pontius: About one hundred and twenty miles.

Mr. Smith: Well, that might be entirely due to some local causes and it might be due to the condition of the air above. The air is in circulation not only horizontally with the earth but convection is going on continually. For instance, in the heavy frost which occurred in Hardin county last June, and which was a very remarkable illustration and did damage to the amount of thousands of dollars, it was found that in no other part of the state was there anywhere near the frost condition that was found in that county. I spoke to Professor Abbey of Washington, D. C., with reference to it and he says that it must have been caused not by stagnant air and the radiation of heat from the ground alone, but

by a descending column of cold air which became so cold that it did not warm enough by compression to keep the temperature up to freezing. There might, for instance, be under some conditions a warm stratum of air, while there would be a colder stratum on either side, and *vice versa*.

I extend to you all a cordial invitation to visit the weather bureau and see for yourselves how we manufacture weather, and what our plans and systems are, and also give me an opportunity to talk with you personally. We are furnishing weather forecasts, as well as frost warnings, throughout the state. We are distributing them very widely now and we are reaching by mail, by telephone and telegraph, over five thousand different places in the State of Ohio with our weather forecasts on the afternoon of the day of issue, giving the forecast for the night and the following day. If there are any of you who do not get the weather forecasts, let us make arrangements so as to put them in your hands in order that you may be able to use them.

Mr. R. H. Wallace, Ross county: I would like to ask the Professor to explain the causes of these intensely cold drafts of air that come upon us in the winter season, such as the 10th of last February. And how it is that the air sometimes gets so wonderfully cold?

Mr. Smith: The reason probably is that it is a descending body of air from the intensely cold regions above the surface of the earth. We know our cold waves originate in the northwest over that great area of ice and snow which in the winter time is to be found in the British northwest and is probably caused by the intensely rapid radiation of heat. They get very little sunlight throughout the day, and very little warmth from the sun and just as soon as the sun goes down under a clear sky, which prevails there usually, the heat radiates very rapidly, and it gets intensely cold so that after a storm has passed by, drawing in bodies of air into its center, it draws out the cold air or the cold air pushes itself out from the northwest and we get the intensely cold waves referred to, and added to that there comes settling down the cold wave which is above the surface of the earth. It has been shown that in a balloon which has been sent up at Paris, France, carrying instruments alone, and which went up to the height of about ten miles, that the temperature of the air there was several hundred degrees below zero. The very intense cold of last winter spread well to the south and, in Louisiana particularly, the orange trees that were saved from that cold wave were banked up by earth, which offers a suggestion for your peach trees. I have not had sufficient experience with peach trees to know whether they could be banked up, but trees were protected there by being banked up, and by being wrapped with hay around the lower part of the branches, and the bottom of the tree. That is a suggestion which may be of advantage in the preservation of peach trees, as many of them were killed last winter. Of course we do not know definitely when an intensely cold wave is coming, but it is always well to be on

the safe side, and it is always well to insure a crop by a little expenditure of money along this line. If you had wrapped up your trees as did the orange growers of Louisiana they probably would have been saved.

Mr. George L. Hyslop, Henry county: I would like to relate my experience in protecting a crop from frost. Last year I grew five acres of tomatoes for a canning factory. One day in October there were indications of frost and I had several loads of damp litter and manure hauled to the patch and placed in piles, of about three or four bushel baskets full each, all around and through the patch about ten rods apart. I also hauled a barrel of coal oil. Then in the evening, to make sure whether there would be frost or not I hung out a thermometer at 8 o'clock, at which time it registered 42 degrees; at 9 o'clock it registered 40 degrees, showing that the mercury was going down at the rate of two degrees per hour, and that by 1 o'clock a. m. it would reach 32 degrees. So at 10 o'clock I went to the patch and took a thermometer with me and hung it up about the center of the patch. Then I began to saturate the manure piles with the oil, and at 12 o'clock the thermometer registered 33 degrees, at which time I began to light my fires. The damp manure with the oil made a dense smoke that rose about twelve to twenty feet over, and covered the patch with a cloud of smoke. At 3 o'clock I had raised the temperature to 34 degrees, and bid fair to be successful; but about that time a slight current of air set in from the west and carried most of the cloud of smoke off the patch, and there were a few spots in the patch where the vines were injured, but most of the patch passed through without injury. I think if I had placed the piles of manure about three rods apart around the patch and some through it and then lighted each alternate pile, and afterwards the remaining piles, if they were needed, that the frost would have been entirely prevented.

Mr. Smith: That is a practical experience that is worth a good deal more than anything I can say from a theoretical standpoint. If the gentleman had had a portable smudge so that he could have moved it about the field, he would have obtained even better results.

Mr. Hyslop: Or if I had placed them closer together, say about three rods apart, and then lit every other one as the temperature begun to go down, I would have had better results. But that was my first trial of it and I cannot say it was a complete success.

President Scott: We still have time, gentlemen, to discuss this matter a little longer.

Mr. B. D. Marshall, Perry county: I would like to ask whether it would be practicable to locate one or two fires such as have been mentioned in a small house garden?

Mr. Smith: It would depend upon where the garden is I should say. If it be on a sloping hillside it would be of no use, but if it is in a low place you can effectually keep the frost away in the manner

suggested. If it is on a hillside you would not get the benefit in your efforts to keep the frost away that you would if it were in the lower ground. But I believe it can be applied to common gardens to such a marked and valuable extent, that it will prove of advantage to the farmer.

Mr. C. C. Shaw, Licking county: Some years ago when we came very near having a frost, I had a crop out that I was very anxious to save and in the afternoon we went to work and hauled cord wood and put it around through the field and then got wet straw from a straw stack and covered it over. We found that the temperature was going down very fast. At 4 o'clock it was about 34, I believe, and we went out and lit these fires and kept them going through the night, and I noticed at 4 o'clock in the morning that the frost outside of where we had our fires was very noticeable indeed; we continued and got up a great deal more smoke and the frost seemed to just vanish gradually. I noticed that our garden stuff was not affected at all nor our orchard, but the garden stuff and orchards of our neighbors were very materially affected. I am satisfied that I saved enough fruit to more than justify the trouble and expense. I think I was amply paid for building those fires. The smoke just gradually settled over the field and we tried to distribute it as effectually as possible. We did not build as many fires as the gentleman speaks of, but we got them pretty well around the field, and it made quite a volume of smoke by the wet straw being added to the fire to keep it from blazing.

Dr. W. I. Chamberlain, Summit county: What year was that?

Mr. Shaw: I do not remember what year it was, probably seven or eight years ago, when there was a very heavy frost.

President Scott: There is a little more time yet, gentlemen, and we would be glad to have any of you state your experiences along this line, because all of these experiments are of considerable value, especially to those engaged in market gardening and those situated in valleys.

Dr. Chamberlain: It seems to me, Mr. President, that the better way is to locate your garden or orchards where they will not be subject to frost. I remember some time ago that we had a very heavy frost in our neighborhood. My orchard is located on a slope; it is twenty-five feet from the summit down to the sugar camp, or in fact forty feet, if you go down to the farther end of the farm. In the lower part of my sugar camp the young hickory trees had leafed out, and the leaves were still tender, and those leaves up for about twenty-five feet were bitten by frost, and that line of frost extended right into my orchard and killed all the apples on the lower part of the slope. On some trees you could see where the apples were all killed up ten feet high, and then there were good apples above that; the frost line got nearer and nearer the ground as you went up towards the summit of the slope, and in the higher parts of the ground about one-half of the orchard had

an excellent crop and about the only crop in that vicinity. That seems to suggest the location of your orchards on high grounds, so far as large orchards of fruit are concerned; or, to be situated by some great body of water, like Lake Erie, it seems to me would be a more valuable means of frost protection than these special means which have been suggested. With those who are in valleys and who cannot locate their orchards in that way, these special means of frost protection are of exceeding value.

President Scott: Are there any other persons who want to express themselves?

Mr. Henry Kelley, Ashtabula county: Our pear orchard is located near a piece of timber. It is protected on the south and east by the timber. We did not lose a pear tree last year, while several of our neighbors near Lake Erie, in fact, within a mile of the lake, lost nearly half of their trees which were not protected in any way.

President Scott: If you have related such personal experiences as you desire, and no one else has anything to say on the subject, we will proceed with the program. We have been compelled from necessity to make a change upon our forenoon's program. Prof. Weber's apparatus for throwing his illustrations upon the canvass has been wired and arranged in this room, and he is down upon the program for an address this evening. But this room is to be occupied tonight for other purposes, and we will be compelled to occupy the hall above. The instrument which is used in connection with his illustrated lecture being already wired it becomes necessary for him to deliver his lecture this morning instead of this evening; and the gentleman who is down upon the morning program for an address on the "Benefits of Co-operation in Marketing Fruits," Mr. W. H. Owen, of Catawba Island, will address you this evening in place of Prof. Weber.

I have now, ladies and gentlemen, the honor of introducing to you Professor Henry A. Weber, of the Ohio State University, who will entertain you with some fine illustrations and give you much valuable information.

Prof. Henry A. Weber, of the Ohio State University, Columbus, then addressed the Institute on the subject

#### THE MANUFACTURE OF BEET ROOT SUGAR—ILLUSTRATED.

MR. PRESIDENT, LADIES AND GENTLEMEN:—Although the first attempts to manufacture sugar from the beet in this country were absolute failures, there has perhaps been no time since the development of the sugar beet industry that some thought has not been given to this subject. In the last few years renewed interest was awakened in the matter of beet sugar production from the efforts that were made by our present Secretary of Agriculture, Hon. James Wilson, and a great many people became interested in this industry throughout the country. Seeds were distributed as you remember a few years ago to nearly all the states in the Union, and a large number of test plots were planted for the purposes of determining the location best adapted for the manufacture of sugar by means of

the beet. Beet sugar has been manufactured however in this country more or less for a great number of years. The first attempt, if you remember, was made at Chatsworth, Illinois, and the conditions not being favorable the industry, after the expenditure of a large sum of money, removed to Freeport, Illinois, and from there to Wisconsin, where it finally succumbed. In California more or less beet sugar has been made for a large number of years, but in the last few years as I say the matter has received a new impetus in this country.

I have a few illustrations that were loaned me by the Department of Agriculture in Washington, and I thought as they were here that they would perhaps be of interest to some members of the Farmers' Institute, and have, therefore, decided to show them to you, in connection with this address.

Now, the picture which we have here upon the canvass represents a sample of the sugar beet. There are a few well known varieties that are very generally grown. This is a sample of the Vilmorin Imperial Sugar Beet. Its characteristic is a smooth leaf, as you see, and the form as given in this illustration is the correct form for a well grown sugar beet.

I will now exhibit to you the next illustration. You now see another sample of the Vilmorin beet, the violet sugar beet. Of course the color is not shown here, but it also is of very excellent quality. The next sample is what is called the Kleinwanzlebener Sugar Beet, which was perfected in Germany. It is a little different from the others, having a more curly leaf, and it is a beet of very excellent quality. This Kleinwanzlebener beet has come to its present stage of development simply by the application of science. There is a plant growing indigenously along the coast of the Mediterranean Sea, known as the *Beta vulgaris*, and from this plant the so-called garden beet was developed, a beet that is known all over the world, and which has been used as a vegetable for centuries. This garden beet was analyzed about the year 1847, together with a number of other vegetables, by Margraff of Germany, and he found that a number of these vegetables, and especially the garden beet, contained cane sugar, the percentage of cane sugar, however, being quite small. We usually see it in the form of a red beet, but there is also a white garden beet of practically the same composition, except in the color of the leaf. The white garden beet was employed in the old country for a long time as cattle food. But it was this beet that was studied and found to contain a larger percentage of cane sugar than the other vegetables which Margraff examined at the time. Now from the percentage of sugar that was contained in the beet, which was about 4 or 5 per cent, or probably in some cases 6 per cent., Margraff thought it would be possible to manufacture sugar on the continent of Europe, and made a number of experiments along that line. But his methods of extracting the sugar, which was done with alcohol, were of course very expensive; still he could prepare the sugar from this beet in this manner and did it and showed it to the academy of science at the time.

We will now go on with the illustrations. This picture shows the root system of a full grown sugar beet, which is taken out of the soil very carefully. Of course when a beet is pulled, as it ordinarily is, these roots are all broken off and remain in the soil, but if the soil is removed carefully it shows how widely extensive these fibrous roots are by which the beet draws its food from the soil. This plant also shows another thing. The sugar is manufactured in the leaf of the plant, and you can see the large amount of leaf surface present as compared with the relatively small root, or tuber, and this is true of all the sugar-producing plants. Take corn, sorghum and sugar-cane, they all have a large leaf surface compared to the size of the plant, and it is this that allows them to produce the large excess of sugar which accumulates in the plant itself and can then be utilized for the manufacture of sugar. Here is a sugar beet

that is colored in its natural color. There is nothing more to be seen about that. We will pass on to the next illustration.

This picture shows the proper position of the beet in the soil, and it shows also the necessity of preparing the soil in a proper manner for the production of the sugar beet. The beet should have but one single tap root, as shown in this picture. Now if the soil is shallow, and is underlaid with hardpan, or a very hard subsoil, then in place of one tap root the beet will throw out three, four, five or six roots in different directions, making a distorted beet, and the reason why this is bad is that these tap roots must all be cut off and it is much more difficult to cut off a large number in cleaning the beet than to cut off one. They also take up of course a certain amount of the sugar that is contained in the beet, and in fact these secondary tap roots are called "sugar thieves" by manufacturers of sugar. In order to get a beet with the proper shape it is necessary for the soil to be deep, and the subsoil to be mellow. If the soil is naturally deep, as it is in some parts of the state, like that along the shores of Lake Erie, there is no subsoiling necessary. If the soil is underlaid, however, with an impervious hardpan, as it is in this portion of the state and in most of our clay soils, then it is necessary to make use of the subsoil plow in order to loosen it to a proper depth.

This picture represents a station for the production of the seed. I want to say a few words in regard to that. The seed of the beet is not raised at random, but, at the present time, every single beet is examined before it is set aside as a mother beet. This picture represents the station where these examinations are made, but that picture of the building might represent a building for any other purpose, so we will pass it by and take a view of a room on the interior of the building. Now here is a saccharometer, or polariscope, being the instrument which is employed at the present time for determining the percentage of sugar in the beet, when a mother beet is selected; of course the best seed is planted for this purpose and for that reason the manufacturers of sugar do not raise their own seed; the seed is raised as a specialty by persons who are adapted to the raising of it. Now, in the selection of the mother beet for the production of seed only such beets are retained as have a high percentage of sugar, and it is in this way that the percentage of beet sugar has been increased to what it is at present. When Margraff first examined the sugar beet it contained at most 5, and in some cases 6, per cent. of cane sugar; now it is the common thing to find in beets that are raised for the manufacture of sugar individual beets that have 20 per cent. of cane sugar, and in the manufacture of sugar in Europe, especially in Germany, where a great deal of attention has been paid to the development of the beet in the last few years, the average percentage of sugar contained in beets grown for the purpose of its manufacture is 16 per cent., showing conclusively the stride that has been made in the improvement of the beet, and which has made it a strong competitor of the sugar cane.

Formerly, in the selecting of the seed beet, the specific gravity was taken by submerging it in a solution of salt and water, and the beets that had a certain specific gravity were used as mother beets. At present, however, a different method is followed. That is, a portion of the beet is cut out just as you would cut out a piece of cheese with a cheese borer and the cone that is cut out of the beet is examined; that is, the juice is pressed and the specific gravity taken and the percentage of sugar determined by the polariscope. All beets in Germany that contain sugar to an amount of less than 16 per cent. are thrown away, or are used as cattle food, and only those that have 16 per cent. or over are kept as mother beets for the production of seed. In these stations where seeds are grown for the market there are at least seventy-five or one hundred polariscopes being used all the time in the examination of mother beets.



Here is an illustration showing the beet in the seed and one showing where they are gathering the seed. There is nothing very much to see about them, so we will pass on. Here is a beet that shows the seed complete. The sugar that is stored up the first year in the growth of the beet is used for the production of the seed in the second year, and of course after the production of the seed the tuber which was full of sugar is emptied. Now, it is a fact, and has been shown, that if this mother beet which is used for the production of seed is rich in sugar it will produce seed that in its turn produces beets rich in sugar, and this has been one of the means by which the plant has been developed from 6 per cent. up to 20 per cent. of sugar.

This illustration shows some of the implements that are used for the sowing and cultivation of the beet. This is a hand drill which you have undoubtedly all seen, and have used for other purposes. It is simply pushed along and sows one row of beets at a time.

Here is a drill that sows four rows of beets at a time. Of course it is drawn by horses.

This illustration shows a beet cultivator. There are a variety of these cultivators; I have only a few pictures of the more important ones. While a cultivator may be used in cultivating beets, yet a great deal of the work of course must be done by hand. Here is another illustration of a cultivator. Here is a plow that is used in fields where irrigation is employed and is a little different in construction. Here is what is called the root digger, or beet digger; the beets have to be drawn from the soil when they are harvested, and it is impossible to draw them out by hand on account of the large number of rootlets that are attached to them, so this instrument has been invented for that purpose. The prongs pass down on both sides of the beet and loosen the ground on each side, and the beet is caught in the narrow part and is raised up out of the ground, then all the workman has to do is to follow the instrument and pull the beets out of the soil after they are thoroughly loosened.

This illustration shows a silo for the preservation of the beet. In countries where there is no danger of frost, very little attention need be paid to the preservation of the beet, but, as the sugar beet industry has developed to its highest degree in the northern sections of our country and in the northern latitudes of the world, it becomes necessary to have some means of preservation from frost, because the campaign of the beet sugar factory is a long one, beginning at the time the beets are ripe and continuing until the deterioration of the beet no longer makes the production of sugar possible. This carries the campaign up to the end of January and possibly the first of February. Now, in order to protect them from freezing the beets are either put in cellars or in silos and this illustration represents a section of a silo. Here is the tile that runs down to the top of the beets which gives ventilation. If the beets were simply covered, without any ventilation, the heat would become so high in the interior of the silo that germination would take place and the beets rapidly deteriorate. They must be kept cool to avoid germination, that is, making second growth, and they must be protected sufficiently to prevent freezing. After the beets have been harvested and before they are put into the silos the campaign of manufacturing into sugar begins, just as soon as the beets are ripe. They are brought to the factory and the first thing to do is to clean them. This is done in a so-called washing machine. The carrier elevates the beets wherever they are unloaded and carries them up to the washer, which is illustrated in this picture, a part of which you see at this point (indicating). It is nothing more than a drum cylinder perforated with holes and immersed in a tank of water, and is turned with a cog wheel arrangement at this point and is kept in a rotary motion. The beets rub against each other, and the water is forced through at the same time, and they

are washed in this manner. After the beets are washed they are thrown out onto a table, and are then cleaned, and this work has to be done chiefly by hand. The upper part of the beet, that is where the stalks grow, and the upper part of the crown of the beet must be removed. This is done for two reasons. In the first place that part of the beet contains little sugar; and in the second place it contains an excessive amount of mineral matter, and it is found that more sugar can be made from a beet by removing this portion of it. So also a portion of the tap root is removed if it is too long. This is one reason why the sugar beet should grow down in the soil as low as possible because if the subsoil is impervious the beet is forced up out of the ground and that portion which is above the ground must be removed because it is unfit for the production of sugar. After they are cleaned they come to what is called the beet slicer.

Before we take up this subject, I want to call your attention briefly to the fact that in the first processes of beet sugar manufacture the juices were expressed, a great many different processes being used for this purpose. The best, however, was the so-called hydraulic press, where the largest percentage of juice could be obtained. There were other processes which were very common in use, as for instance, the so-called roller process, which is simply a large press used for expressing the juice as in cane mills for sugar cane, but these have all been superseded in late years by the so-called process of diffusion. The first part of the diffusion process is to cut the beets up into chips. Where the beets were formerly pressed they were made into a pulp and this pulp was pressed just the same as the pulp of the apple is pressed in making cider, but in the diffusion process it is not necessary to have the beets in the form of pulp. They are cut into chips a fraction of an inch in thickness, and this is done by the so-called slicer. In this illustration the beets are elevated to this machine, which is set in the proper place, and the beets come in at this point. The machine is surrounded by an iron cylinder and the height of this iron cylinder is from three to four feet; the beets as they run into this cylinder fall onto a plate, for instance, at this point, a circular plate made of heavy metal and this plate contains eight openings, running from the center to the circumference, or near to the circumference. In each one of these openings there are placed knives by which the beets can be cut, similar to the knives in a kraut cutting machine, only they are placed from the center out. You can see the opening here in this illustration. Here is a diagram showing the openings in the iron plate that is on the inside of this machine, and these openings contain knives and the plate revolves three or four hundred times per minute, and as these knives come in contact with the beets they are simply sliced up into thin slices and the pressure produced on the knives is produced by the height of this drum which surrounds the machine at the top, being about three feet, or a little over, in height.

After the beets have been sliced they come into what is called the diffuser. We have here a single diffuser, such as is in use in the manufacture of beet sugar. The chips that are cut in the slicing machine, fall into this diffuser, and it is completely filled to the top and then closed and covered with water. I want to point out one or two things here. This is the means of heating the water. This cylinder is connected with a steam coil by which the juice passing up and entering into the diffuser can be heated. It is heated up to about 60 degrees Centigrade, that is found to be the best temperature; if it were too hot it would make the chips swell and prevent proper diffusion, but about 60 degrees Centigrade is found to be the proper temperature.

I want to call your attention to this cylinder because it is shown better here than the illustration a moment ago. This is the cylinder for heating the water, or the juice, to 60 degrees Centigrade.

We will now pass to the next. We have here a representation of the double

line diffuser; two lines of diffusers in a single battery, one line on this side and one on the other. Here are the slicing machines at the top and they are made so that by the use of this apparatus the sliced beets can be taken from one diffuser to the other and then dumped down into the diffuser until it is filled. That is what is called the double line diffuser.

We will now go on to the next which shows a battery in circular form, or the so-called circular diffuser. Here again the slicing machine is at the top and after the beets are sliced they fall into this funnel-shaped spout and can be carried to the different diffusers. There are twelve of these diffusers in number, and the spout turns at this point, and it is placed exactly in the center of the system of diffusion batteries so that by turning the spout, the end of it will reach the opening in one of these diffusers. This carrier elevates the beets to the top and then they are emptied into this chute and brought down into this slicing machine, and then fall down through that funnel-shaped spout into the diffusers until the batteries are all filled. These diffusers are all run practically the same way, whether it is a circular diffuser or a double line diffuser. The first diffuser is filled by placing the spout over it, thus permitting the chips to pass down into it. When it is perfectly full it is covered with water at about 60 degrees Centigrade, and the manhole at the top is closed. In the meantime the spout is placed over the second diffuser and it is filled, and so on, one diffuser after another being filled with these chips. After the second one is filled with chips the water in the first is drawn into the second one, and that is done, not by simply drawing the water off and heating it up as was formerly done, but the cylinders are all connected perfectly tight so that the liquor can pass from one diffuser to the other. For instance the juice or liquor in this diffuser is heated up to 60 degrees, Centigrade, and then it is run over into the second diffuser. When this diffuser is filled with fresh chips it is closed and the juice or liquor is forced into the second diffuser, where it is reheated to 60 degrees, Centigrade, so that it always comes out at that temperature onto the fresh chips.

Now, after the second one is filled the same thing occurs with the third. More water is added to the first one, or what is called diffuser No. 1, and the water from it passes to diffuser No. 2, and the liquor in No. 2 passes to No. 3, always coming in contact with the fresh chips. In this manner the same juice, or liquor, comes in contact with the twelve diffusers, all filled with fresh chips, and by the time it reaches the twelfth one it has taken up as much sugar as it is possible to take out of the chips, and by the time the juice gets around to No. 12, which is next to No. 1, at the other side, this diffuser is exhausted; that is, these chips have given up all of their sugar, they have been washed twelve times and the sugar entirely exhausted, and that one is then emptied. No. 1 is emptied and filled with fresh chips. No. 1 then becomes No. 12, and No. 2 becomes No. 1. From diffuser No. 12 the liquor is always withdrawn and is manufactured into sugar, and diffuser No. 1 is always refilled with fresh chips. By this process of diffusion as much liquor as possible can be obtained, and in fact all the sugar can be obtained from the beet. The juice, however, is more dilute than it would be if it were expressed, that is one objection to it, but the process has been so simplified and found to be so profitable that there is no sugar beet factory in Germany that uses an old-fashioned process for the expressing of the juice, the diffusion process having replaced them all. The chips that have been exhausted of their sugar are used as cattle feed and it is the custom in factories, even in the United States, to ship them to a considerable distance. They are perfectly saturated with water after the diffusers are emptied and numerous processes have been invented for pressing out the larger portion of this water from the exhausted chips in order to decrease the expense of shipment.

This illustration represents one of the processes that is in very common use.

It represents a strong iron cylinder in which a conical-shaped form passes with a certain number of blades running out in this direction. The chips are thrown in at this point and the cone is revolved by the turning of these screw-shaped flanges on the large cylinder, and the chips pass down to this narrow portion, a large proportion of the water is forced out and the resulting pressed chips have their food value manifestly increased and they can be shipped at much less expense.

In the manufacture of beet sugar a very large quantity of lime is used. This is not the case with other sugar-producing plants like sorghum, or sugar cane, but in the manufacture of beet sugar it is necessary, and it is found profitable that factories should have their own lime kilns. This machine shows the method of slacking the lime and keeping the milk of lime stirred which is put into the juice; the lime is added in the form of milk of lime. It is slacked and placed in this large circular vat; this contains a rake with teeth running down, and this, revolving continually, keeps the milk of lime in motion, so that it has the same consistency.

The juice is treated with lime in a so-called defecator, and these defecators are usually square tanks, that are heated with a steam coil at the bottom; by means of this heating a scum rises, and this is skimmed off, and a large part of the lime in the form of sucrate of lime forms at the bottom; the whole mass after it is purified or defecated in this manner is passed into the so-called carbonatation tanks where the excess of lime is removed. The excess of lime must be removed and also the sucrate of calcium which is insoluble must be decomposed, otherwise there would be serious loss of sugar. This is done in the so-called carbonatation tank and the juice comes into these tanks and carbon dioxide is forced into the boiling hot liquid and by using carbonic acid the sucrate of calcium is decomposed, and the excess of lime which is contained in the solution is precipitated in the form of insoluble calcium carbonate. The so-called carbonatation process is necessary to remove this excess of lime. After the sugar solution has been defecated and carbonated, it is still impure. That is, it is not perfectly clear. In order to clarify it, it is passed through what is called the press filters. These are nothing more than a series of heavy iron frames that are covered on each side with perforated iron plates leaving a hole or space about an inch or two inches on the inside of the frame, and this perforated iron plate is covered on each side with a heavy felt cloth, and then one of the frames is placed to the side of another until as many of them as are necessary are employed, and in fact the whole machine is filled with frames, and then the sugar solution by the means of pipes passes into the inner portion and always between two of these sheets of felt cloth and is forced in two directions to the inner portion of the frame, and then the filtered juice runs out at stop-cocks, and in this manner the juice can very rapidly be filtered, and it comes through the press filters perfectly clear. In a beet sugar factory it is not necessary that the sugar should be purified. Raw beet sugar is not a consumption sugar and can not be used as such on account of its bad odor; in this respect it differs from raw cane sugar, because raw cane sugar really has a very pleasant odor; beet sugar must be purified. This is done in a variety of ways. In the old country where factories have been developed to their highest degree the refining process is carried on in connection with the manufacture of the sugar, that is where consumption sugar is made. In some factories only raw sugar is made, and this is sold to sugar refineries where it is afterwards refined. But where consumption sugar is made directly from the beet there are several processes for the refining of the sugar, but the one that is mainly used in this country is, I think, the sulphur dioxide process. After the liquor has been filtered it simply comes in contact with the fumes of burning sulphur and becomes saturated to a considerable extent with this sulphur dioxide. This prevents the formation of color in the manufacture of the resulting crystals

of sugar; and the consumption sugar can be made directly without the use of charcoal, although the most economical method is by the use of the charcoal filters. After the sugar solution has been purified, as I have suggested a moment ago, it is necessary to condense it. This condensation took place formerly in open pans just exactly as in the manufacture of sugar in this country years ago. The evaporation was in open kettles or pans. Now, the greatest enemy in the manufacture of sugar is the color. The more colored your liquid becomes in the manufacture of sugar the more expensive the subsequent purification of the sugar is, and therefore a great deal of energy must be directed towards the prevention of a large amount of color in the sugar solution. In the sugar solution the boiling point increases as the solution becomes stronger, so that it runs up far above the boiling point of water. At this temperature a portion of the sugar solution is changed into caramel. This caramel has high colorific properties which are objectionable. There have been improvements made since that time by which concentration of juice takes place in the so-called vacuum pans. A vacuum pan is simply a cylinder such as is shown in this picture. It is constructed perfectly air tight so that the air can be pumped out and the pressure upon the liquid removed. Now you know if we could remove the whole of the pressure upon the water it would boil at zero at the same time while there was ice forming over the surface; and this fact is made use of. The vacuum pans are exhausted by a small pump which is at the bottom, but which is not shown on this picture, and the pressure upon the surface of the liquid is thus removed. The first pans that were used were single pans, but afterwards it was found that pans could be employed giving a so-called treble effect. In fact there are in some of the large works quadruple vacuum pans. In the instance of a single vacuum pan the steam that comes from the condenser is condensed at this point and is carried away. Then the steam that passes out through the first cylinder enters and passes down through the bottom of the second cylinder. These cylinders at the bottom are filled with copper tubes by which they are heated. The first cylinder is heated simply by passing the escaped steam into a large copper tube at the bottom of the vacuum pan and the steam which escapes from that passes down into the second one and from that down to the third one and finally it is condensed and allowed to run away, so that a great saving in fuel has been accomplished in the condensation of this dilute sugar solution by the use of the triple vacuum pans.

The next picture will show these pans a little more in detail. The steam that comes from this one passes into the second one and then from the second one into the third one, as you see, and from the third into a cylinder where it is condensed and this is connected with the vacuum pump at the bottom by which the water and air are pumped from the machine. These so-called treble effects are employed for evaporating the thin sugar solution which is obtained after diffusion in the form of semi-syrup which can then be utilized for boiling into sugar. The boiling of the sugar takes place also in the vacuum pans. In beet sugar factories the boiling down of the sugar is not done in an open kettle. This open kettle process is still employed with sugar cane in some parts of this country, and perhaps some of the islands, but even there on better plantations the vacuum pans have superseded the open pan. This picture gives you a good idea of the vacuum pan. The dilute solution passes through the cylinders and they are connected at the bottom with a vacuum pump by which the air is pumped out of the cylinder as well as out of the vacuum pan, and then by opening the stop-cock at the proper place the sugar solution can be drawn into the vacuum pan.

The sugar solution is boiled in two ways. It is boiled down to a liquid syrup and then crystalized; or it is boiled to a grain in the outset. The first sugars that are now manufactured from the sugar beet are boiled to a grain in the begin-

ning. In order to boil to a grain the vacuum pan is filled to about this depth (indicating) with sugar solution, pure sugar solution, or semi-syrup after it has been run through the filtering process again, and this is boiled rapidly down to the point of crystallization.

This picture shows the tester. The tester is simply a solid brass rod with an indentation on one side by which a spoonful, or a small quantity of the molado can be drawn out by the workmen without destroying the vacuum. The sugar solution is evaporated down until the workman by drawing off a sample by means of this tester sees that the crystals are being formed. A competent sugar tester knows whether he has the proper number of crystals to build up the sugar. These first crystals remain in the vacuum pan until the close of the operation, that is until the tank is filled with molado, or mush sugar. The workman draws in a very small quantity of semi-syrup, being careful not to draw in enough to redissolve the small crystals which are formed. In a few minutes these crystals become larger, then he can draw in more of the semi-syrup, and he keeps on drawing more and more until when this vacuum pan is half full he can draw in a large quantity before the crystals become redissolved. They have then attained a large size. And this process of drawing in more liquor and evaporating is carried on until the pan is filled up as high as it is possible to fill it, until it is full of the mush sugar. At the sides there are plate-glass windows by which the workman can look in and on the opposite side a similar row of windows which let the light in so he can see the operation as it is going on. A nine-foot pan is capable of making at one strike eighty barrels of granulated sugar. The smaller pans, of course, make less than that. A six-foot pan will make about thirty or forty barrels of granulated sugar, which is about the ordinary sized pans used in factories as well as in refineries. All the sugar is of uniform composition.

Here we have a vacuum pan or a strike pan that is used in the larger manufacturing, and in the larger sugar refineries. This pan has a diameter of twenty-two feet and is about fifty-five feet in height. It is worked in exactly the same manner as the other pans which I have described. It is simply a larger one, and when this pan is filled it will make one thousand barrels of granulated sugar at a single strike, and one barrel of sugar is just the same as another. The grain of the sugar is formed in the vacuum pan and nowhere else. Now, after the sugar has been boiled down to mush sugar—that is after the vacuum pan is full of mush sugar, then the sugar is withdrawn into what is called the mixer. This mixer is a large semi-circular tank which contains a shaft that has teeth on the side and that revolves continually so that the sugar solution, or the molado, is kept in motion; for if it were allowed to remain quiet any length of time the crystals would settle down in the bottom and no longer flow out into the centrifugal machine. This illustration shows the mixer with the shaft running through it and the arms attached to it which continually keep the molado in motion attached to the so-called centrifugal machine. The molado is still warm as it comes from the vacuum pan and runs into the mixer, and from the mixer into the centrifugal machine where the sugar is separated from the molado. The inner portion of this centrifugal machine consists of a basket which is surrounded by a perforated brass sheet with small perforations so that the molasses can pass through while the crystals of sugar remain on the inside. It has a large cast iron case on the outside, but on the inside is a basket which revolves at the rate of fourteen or fifteen hundred times per minute, and the molado as it enters into this cylinder passes into the basket and then the basket is set in motion and the centrifugal force throws the molasses or syrup out through these little holes and it is caught at this point and runs off and the sugar in a very few minutes is drained to dry sugar, or almost dry sugar; that is, to dry raw sugar. In the manufacture of sugar from the sugar beet, as I said a moment ago, it is

necessary to have recourse to the refining process, because the beet sugar must be refined in some way or another before it can be used as consumption sugar. We have here a series of charcoal tanks or filters where bone charcoal is employed for the purification of the juice. There is nothing very remarkable about this excepting that these tanks are five or six feet in diameter in the larger works and thirty, forty or fifty feet in height. They are filled with granulated bone charcoal, and the sugar solution after it is evaporated in the evaporating pans to the form of semi-syrup, and before it is boiled to sugar, is allowed to pass through this charcoal bed and it passes in at the top and gradually comes down and out at the bottom, when it is perfectly clear and colorless and has lost all the taste and smell which it had before it passed through. Then the semi-syrup is taken down to the vacuum pan and boiled down and in place of raw sugar we then have granulated sugar—refined, white, granulated sugar. The capacity of the charcoal is not perpetual, but it soon becomes saturated with the coloring matter and with the foreign matter in the juice and then has to be washed and reignited, or revived, and used over again.

This is a picture of a beet sugar factory in California. There is nothing very remarkable about it so that we will pass on to the next. This is a place at the factory where they are unloading the sugar beets and carrying them in. Of course in that climate for a large part of the season there is no danger of frost and they can haul the beets in from the field near the factory and keep them stored in that manner. This table shows the value of a ton of beets to the manufacturer, showing that there is a profit of three dollars and thirty-six cents per ton to the manufacturer.

This table shows the cost of raising five acres of beets in this country, and it is done by taking everything into account. The first item is five dollars; that is the rent, I presume, then the plowing and the planting and the seed, and the thinning out and the removal of the weeds and an accurate account kept of the expenses of that five acre field which show the total expenses to be one hundred and seventy-one dollars and fifty-six cents. Of course that includes everything; you see that is a little over thirty-five dollars per acre. That of course does not include any fertilizers of any kind. It is simply the other expenses.

Next is an expense account kept for one acre of beets in France, and this includes manure and fertilizers, twenty-eight dollars worth of barnyard manure, and twelve dollars worth of fertilizers, making the total cost for the growing of beets seventy dollars and sixty-one cents. Now of course if the industry is started in this country this matter of fertilizing the soil must receive attention. Of course we may for a number of years go on and raise beets without the application of fertilizers, but eventually the fertilizers will have to be added, and then our expense of raising sugar beets will be increased by that much.

The next illustration shows a comparative statement of the manufacture of beet sugar in the different countries. In Germany in 1896-'97 there were one million eight hundred thousand tons; of course last year there was more than that. In Australia there were one million and fifty thousand; in France there were seven hundred and eighty thousand, and in all other countries there were one hundred and seventy thousand, making a total of four million nine hundred and sixty thousand tons of sugar manufactured from beets in the world.

This next table shows the production of beet sugar in the United States from the year 1830 to the year 1896. It begins at a few hundred tons in 1830 and shows but very little increase until 1882, when there were five hundred tons, and then it begins to increase more rapidly and in 1896 it ran up to forty thousand tons, and this figure represents the total amount of beet sugar made in this country. Now, of course, in the last few years a number of other factories have

been established and the amount of beet sugar made reached eighty thousand tons, or perhaps even more than that.

Here is a table that shows the production of sugar in the world. The world's production both of cane sugar and of beet sugar. This line is the United States and shows that there were three hundred and fifteen thousand tons of cane sugar and three hundred thousand tons of beet sugar made here. I do not need to call your attention to the different countries. You know where the sugar cane grows. It grows in the West Indies, in South America, in Asia, in the Asiatic Islands, and in Polynesia, but I will simply call your attention to the relation of cane sugar to beet sugar. The total world's production of cane sugar is two million seven hundred and forty-seven thousand tons. The total world's production of beet sugar is four million nine hundred thousand tons. That is a remarkable showing when we remember that less than fifty years ago there was practically no beet sugar made, and now, within that comparatively short time, the beet sugar industry has not only overtaken the cane sugar industry but has eclipsed it, so that at the present time there is about twice as much sugar made from the sugar beet as there is from sugar cane. That is a graphic representation of the world's production of sugar. The production of cane sugar in Central America, Spain, South America, United States, and the other countries which appear upon this table show the relative proportions. Asia produces the largest amount of cane sugar; then comes the United States with two hundred and seventy-five thousand tons; and other countries a lesser quantity. The total being two million, seven hundred and eighteen thousand, two hundred tons of cane sugar.

The next illustration shows the production of beet sugar in the different countries of the world. Here is the United States at the top, with a little square, showing the graphic comparison in connection with the other squares. There is Holland. There are the other countries of Europe, Prussia, Russia, Austria, France and Germany, and you will see that Germany is far in advance in the manufacture of sugar from beets — far in advance of any other European country — showing the total amount of sugar made from the sugar beet to be four million, nine hundred and sixty thousand tons.

There is the sugar of the world. Merely a graphic comparison of the amount of cane sugar and beet sugar. That square representing the cane sugar and this square representing the amount of beet sugar manufactured in the world, and this square, of course, representing the total amount of sugar made in the world.

This representation shows the consumption of sugar. I do not know whether I ought to take up your time in regard to it by explaining to you further this illustration. It simply shows the consumption of sugar in the different countries. It is a graphic representation, however, and you can see from this that the United States stands pre-eminent in the amount of sugar consumed per capita. Germany is far less than the United States. France is less than Germany. Russia is less than France. Austria is less than Russia and so on.

This chart shows the production of sugar in the different years running up to 1895 for the different countries of Europe. I need not call attention to that further than to exhibit it to you. It explains itself. These facts have already been shown in some of the previous illustrations.

This illustration shows the relation between imports and production. The amount of sugar produced in the United States is three hundred and fifteen thousand tons and the amount imported is one million, six hundred and forty-five thousand tons. This is a graphic representation of the relations between imports and manufacture of sugar in our own country.

Here is a map which has been made by the Department of Agriculture in Washington showing the sections of the country which are best adapted for the



production of the sugar beet. Beets will grow everywhere, but in order to grow a beet that is rich enough in sugar to be utilized for its manufacture in a profitable manner it must be grown so that it contains at least over 12 per cent. of cane sugar, and at the same time have a co-efficient of purity of about seventy-five or eighty. The countries that have been best adapted for the raising of the sugar beet have been countries that have a summer temperature of not more than 70 degrees, Fahrenheit, and have a rainfall of two or three inches during that time, and this section of the country has been mapped out on this basis, and the dark portion of this illustration shows that part of the country which possesses these requirements. A summer temperature of not more than 70 degrees and a rainfall sufficient to mature the beet. Of course there are other things that come in connection with the proper raising of the sugar beet; and one, for instance, is the proximity to large bodies of water. In this state we have found by work done in our own department as well as by work done by the experiment station that beets richest in sugar can be raised along the shores of Lake Erie. In fact, there were some beets raised right near the shores of Lake Erie sent to us for examination which were five pounds and over in weight, and contained over 12 per cent. of cane sugar, which is a remarkable showing, because the ordinary weight of the sugar beet is not more than six hundred grams, or a little over a pound. So that part of the country seems to be very well adapted for the raising of sugar beets in Ohio.

I have called your attention to the manufacture of sugar from the sugar beet in a brief way. It stands today as you can see from the results we have shown you, as the triumph of the application of chemistry to agriculture. (Applause.)

President Scott: The hour of adjournment has arrived, and I would suggest that we take up this matter for further inquiry and discussion at the convening of our next session, for it is a very interesting and instructive subject. Before we adjourn I wish to announce that the Committee on Nomination of Officers for the ensuing year will consist of C. H. McCormick, of Gallia county; A. T. McKelvey, of Belmont county; and T. C. Laylin, of Huron county. These gentlemen will, between now and tomorrow afternoon, make selections of the necessary officers for the Institute for the ensuing year and will report at that time.

The Committee on Resolutions will consist of Prof. Thomas F. Hunt, of the Ohio State University; Mr. W. W. Farnsworth, of Lucas county; and Mr. R. H. Wallace, of Ross county. These gentlemen will please be prepared to report at the same time, or immediately after the report of the Committee on Nominations tomorrow afternoon.

I will also state that any person at this meeting interested in any resolution which he wishes to be presented to the Institute, should at his earliest opportunity submit his resolution to the committee for its sanction, to be adopted or rejected as the Institute may decide when the report of the committee is presented.

A recess was then taken until 2 o'clock P. M. of same day.

## AFTERNOON SESSION.

*Tuesday, January 9, 1900.*

In calling the Institute to order, President Scott said :

*Ladies and Gentlemen* : — The hour has now arrived that this meeting should continue its work. We have quite a full program for the afternoon, and it will be necessary to be prompt.

Mr. John Begg, Putnam county: Mr. President, before we begin the work of the Institute, I have a pleasant duty to perform, which is not on the program. We see that our presiding officer is not supplied with a gavel to use during the sittings of this Institute. As you know, and as I explained this morning, my name was on the first programs published as the presiding officer, and one of my kind friends, one of the enterprising young farmers of our section of the state, Mr. John P. Harding, conceived the idea of supplying the presiding officer with a gavel to be used at the annual meeting of this Institute. He has made a very neat implement, keeping in mind, as he constructed it, the sterling qualities of the people as indicated in the composition of this little mallet. You will notice here is the walnut with its lasting qualities; here is the sugar maple with its solid qualities, representing the stable character of our citizenship; and this the hickory representing the quality of strength. Now I tender to the President of this Institute this gavel, and hope that he will accept it as a gift, not so much from me, as from the citizens of the county from which was obtained the material out of which it has been constructed. (Applause).

President Scott: I desire to thank the gentleman who had so much mechanical genius as to contrive a gavel of the peculiar characteristics of this one which has been presented to me, and I also thank the honorable gentleman who had the pleasure last year of presiding over these meetings. I shall accept this gift in the spirit in which it is presented, and shall treasure it as a memento of this occasion when I have the honor of presiding over the deliberations of the Farmers' Institute for the year 1900. (Renewed Applause).

As I said before adjournment, we will enter upon a discussion of Prof. Weber's address in reference to "The Manufacture of Beet Root Sugar" at this time. The Professor has given you quite an extended lecture this morning, and a very comprehensive one, and since the beet sugar industry is increasing to such a marked degree, especially in the northern and central portions of the state, it is a matter of considerable interest no doubt to many of you. We will use a few minutes of the afternoon session in discussing this important subject, and any questions you may want to ask the Professor, I am sure he will be glad to answer.

You are at liberty now, gentlemen, to discuss the topic or to propound questions. The meeting is in your hands.

Mr. C. H. McCormick, Gallia county: I would like to ask the gentleman one question. Is it a fact that the little ball which we recognize as the beet seed is composed of two or more germs or seeds of the beet?

Prof. Weber: I would like to have Prof. Selby answer that question, as he is here, and is familiar with the subject.

Prof. Selby of the Agricultural Experiment Station, Wooster: Since I have been called upon to respond to this inquiry I will say that we find anywhere from one to seven sprouts in each seed ball.

Dr. W. I. Chamberlain, Summit county: Are they separate seeds, or otherwise?

Prof. Selby: Simply an aggregation of two or more seeds according to the number. And as a matter of fact there are sometimes sterile ovaries of what otherwise might become seeds. The ovaries are more in number than the perfect seeds. I might say, Mr. President, that in connection with this beet sugar industry, with reference to which we have been called upon to make certain investigations in Ohio, the outlook is certainly one that is likely to lead to the establishment of factories in Ohio.

Dr. Chamberlain: Mr. President, I want to state that we have had a great many reports come in to the *Ohio Farmer* from Michigan, Ohio, and other neighboring states, and not one successful one from the farmer's standpoint. I can not account for it. We have not had one boom from the farmers. We have had a number of statements that it did not pay them at the prices paid for the product so that we have been of the "doubting Thomas" order. We have feared that the stiff Yankee would not bend his back enough to grow beets and to weed them in the hill. Or, to put it more properly, that the price of American labor and the price at which the brainy American farmer is willing to work will not grow beets in competition with the cheap labor of Europe. I am afraid of that. And furthermore I have noticed that although there is more beet sugar produced than cane sugar, it is hardly ever produced without the aid of a government bounty, or a tariff, or something of that kind, of from one to two cents. And I doubt whether with our "new possessions" — I want that to appear in quotation marks — in the tropics we can not produce cane sugar so much more cheaply that the beet industry so far as the average farmer is concerned in the State of Ohio can not be conducted with profit. I doubt whether the beet industry has come into the State of Ohio to stay, and I should be very glad to have my faith strengthened by any one who can give facts of actual downright money compensation to the farmer.

Mr. George L. Hyslop, Henry county: I want to say, that I think American labor at one dollar per day is cheaper than most foreign labor at thirty cents a day. I planted a beet patch and paid a man a dollar per

day to weed and tend the patch, which cost me one dollar and seventy-five cents a ton, and I had a yield of thirty tons to the acre of the class of sugar beet which has been shown on the screen.

Mr. F. G. Pontius, Franklin county: Last week I was up north where they are going to establish a plant, at Fremont, Ohio, and they want an assurance of four hundred acres of land planted to beets before establishing the plant. The plant will cost from three to four hundred thousand dollars. They have the sugar plant projected and they have sent to Germany for six thousand dollars worth of seed. They have delegated a number of persons in Fremont, Ohio, to go north and examine one of these plants and ascertain the most approved methods of raising the sugar beet. One man said to me that a farmer had put out ten acres of beets that cost him one hundred and fifty dollars, and he hired everything done, and the ten acres brought him in five hundred dollars clear of expenses, which was fifty dollars per acre and was certainly very good profit. Then I asked him what did the men who made the poorest showing do, and he said the man who made the poorest showing only raised six tons to the acre. Said I, "What is the trouble?" He said, "It is just like any other department of farming, if a man does not attend to his business the weeds will take the crop. He did not attend to the crop in the usual way." They have now over two hundred acres of ground pledged and the balance is partially promised, so that they are sure that they can procure the four hundred acres. I am interested in this way, wondering whether in Central Ohio and through this portion of the State we would be able to produce sugar beets at a profit.

Mr. R. L. Holman, Clark county: I would like to ask Dr. Chamberlain — I understood him to make the assertion that experiments of raising beets for sugar and making sugar from them have been made only where a bounty from one to two cents per pound has been granted — I would like to ask Dr. Chamberlain if that has not been the case only through a few years of the experimental work, of getting the industry inaugurated, and if after they are through with the experimental work the industry has not proven a success in Michigan, Wisconsin, California, Utah and in other states? Has it not proven a perfect success with the farmers? After they once get to raising beets do they not find that they can raise them as easily as they can almost any other crop, and that the additional price that they get in the market for their crops has more than doubly paid them in comparison to any other crop? I know that I have taken some pains, and have taken a great deal of interest in this subject for the last three years. I have taken pains to visit and talk with the different farmers that are raising them, and in almost every case, the farmers are more than willing to increase the amount of land devoted to this industry. That does not look to me as though it were very discouraging. I believe if we could push this industry instead of throwing cold water upon it that we would be developing and encouraging one of

the best industries to help the farmer along so that he can diversify his crops. I think it will help him out more than in any other way.

Prof. Weber: There is no question, Mr. President, but that in this country there are localities where the sugar beet can be raised as well as in any other country in the world. That is, we can raise beets which are as rich in sugar as are raised in any of the sugar beet countries of the world today. That has been demonstrated. There is no question also but that we can raise sugar beets very cheaply. Of course a great deal of the work must be done by hand, there is no other way of doing it. The thinning out of the plants in the row must be done by hand, but it can be done of course in the beet sugar countries by women and children. They help to do this work in countries other than ours. It is not very hard work. There is, however, this question that comes, in connection with the development of a large industry in this country sufficient to supply our home demand for sugar, that must not be lost sight of; and that is, at the present time there is an over production of sugar in the world. Last year there were five hundred thousand tons of sugar produced more than were consumed. Now if we should produce in this country two million tons, which would be our consumption we would have to cut off just so much sugar from other sugar producing countries, and it would not affect the cane sugar countries as much as it would the beet sugar countries. We would have to compete with them. If we produce our home demand for sugar the beet sugar producing countries today would have to produce just that much less sugar, and they would have to go back to raising corn and grain. Now the question that confronts the American farmer is, will the raising of grain and the selling of it to those countries that are today manufacturing sugar be as profitable as the giving up of this grain market and the raising of our own sugar? We can not do both.

President Scott: The time allotted for the discussion of this question has passed. I now have the pleasure of introducing to you Professor John W. Decker, of the Ohio State University, who will address you in an illustrated lecture.

Professor John W. Decker, of the Ohio State University, then delivered the following address on:

## THE POOLING SYSTEM OF PAYING FOR MILK IN OUR CHEESE FACTORIES MUST GO.

PROF. JOHN W. DECKER, in Charge Ohio Dairy School.

The value of milk for cheese making is dependent on its fat content. The accompanying illustration shows this. Three lots of one hundred pounds of milk delivered by each of three patrons was selected according to fat test. Each lot was made up into cheese as shown in the photograph. The cheese made from one hundred pounds of 3.3 per cent. fat milk gave 10.1 pounds green cheese, the one hundred pounds milk testing 4 per cent. fat made 11.4 pounds, and the



one hundred pounds testing 5 per cent. made 13.1 pounds. Not only did we obtain more cheese as the fat in the milk increased, but the cheese itself was of better quality. The picture here shown simply illustrates to the eye what has been done before at a number of our experiment stations on larger scales. At the Geneva, New York, Station Dr. Van Slyke carried on extensive experiments for several seasons. The following table shows what he found regarding the increase of cheese as the fat in the milk increased.

Per cent. fat in milk.	Pounds of green cheese from 100 lbs. milk.
3.35	9.14
3.72	10.04
4.15	11.34
4.75	12.85
5.13	13.62

In Wisconsin Dr. Babcock tabulated three hundred and forty-seven reports from dairy school students who made up forty million, nine hundred thousand pounds of milk into three million, eight hundred thousand pounds of cheese.

The following table shows the increase in yield of cheese as the fat in the milk increased, and also the increase in the fat content of the cheese, which increase goes to make the cheese better in quality.

Per cent. fat in milk.	Yield of cheese in lbs. per 100 lbs. of milk.	Per cent. fat in cheese.
3.13	9.19	29.7
3.38	9.23	32.8
3.60	9.41	34.0
3.84	9.81	35.1
4.09	10.30	35.8
4.45	10.71	37.8
<b>Totals for 600 lbs. milk</b>		
Lbs. fat.	Lbs. cheese.	
22.49	58.65	

From this table we see that the patron who delivers rich milk to the factory gives the cheese maker both a larger yield and a better quality of cheese. The larger yield is seen if we refer again to the picture. By the pooling system the top is cut off from the cheese made from his milk and is put on top of the cheese made from the patron's milk with the low fat test to make the common average required by the pooling system.

If your milk tests low do you want the money for quantity and quality of cheese that your neighbor has put into the vat? If you do you had better get out your Bible and read what is said in the Ten Commandments about coveting what belongs to your neighbor. If you still want it and insist on having what does not really belong to you perhaps the other commandment that speaks about stealing may apply. If you have that rich milk you now know the truth and can look out for what belongs to you. "The truth shall make you free."

It is my belief that the things most needed in the cheese business of Ohio is the banishment of the pooling system and the adoption of the relative value system of paying for milk according to the fat test. It is very simple. Just divide the money obtained for the cheese sold during the month by the total pounds of fat that was contained in the milk from which the cheese was made and then pay each patron for the fat delivered by him at the price per pound of fat thus obtained. He will then have no incentive to add water to his milk for water does not contain fat and if he skims any cream off he will lose that much in his returns at the end of the month. The relative value plan puts a premium on good milk where the premium belongs. The pooling system puts a premium on poor milk and dishonesty. Man that is born to do evil should not have any such incentive put in his way.

The relative value plan is not an untried theory. About 70 per cent. of the Cheddar cheese factories in Wisconsin are paying by that plan and the remaining 30 per cent. are falling rapidly into line.

If the relative value plan is good enough for Wisconsin it certainly is not too good for the old Buckeye state which has a reputation for furnishing the presidents of the United States.

President Scott: This very important subject is now before you for at least a few minutes' discussion, or for the purpose of making inquiries of Professor Decker. You all understand that Professor Decker has recently come into the state of Ohio from the state of Wisconsin, and is our dairy school instructor in the agricultural department of the Ohio State University.

Professor Decker: I just want to say, Mr. President, that the school is located at the State University, and is now in operation. We are just getting started. We are hardly fairly at work yet, but I would like to make the suggestion to those present that they do not miss this opportunity of coming out to see our institution. It belongs to you and we would be very glad to have you come. We want you to see what is there, and what we are doing, and I extend a hearty invitation to any and all of you to visit us during your brief stay in the capital city.

President Scott: Are you operating your plant there now during the mornings of this week?

Prof. Decker: Yes, every morning at 8 o'clock we begin our work.

President Scott: I would suggest then that all who can should avail themselves of this opportunity to go out and visit the dairy department of the State University and to see what they are doing out there. I know it will pay you if you have not already been there. Gentlemen, the topic is now before you for discussion.

Mr. R. H. Wallace, of Ross County: I want to endorse what the professor has said about our visiting the dairy school and I want moreover to urge the need of sending sons of our farmers there, but I want these farmers to visit also as many of the public institutions of the city as they can while they are here. Many of the public institutions here belong to the state and to the farmers of the state, and I want to insist that they are not being patronized as they ought to be.

Mr. J. A. Lehman, Ashland County: Just one question with reference to Professor Decker's lecture. I notice in the illustrations and photographs that an increase in butter fat of less than 2 per cent increases the weight of the cheese from a given amount of milk nearly 20 per cent. How are we to account for this?

Prof. Decker: These pictures that are exhibited on the screen show to the eye the relative difference in the amount of cheese that you get. By the addition of butter fat you add along with the butter fat a certain amount of water, which increases the size of the cheese. It is very possible that in richer milk the solids other than fats may increase proportionately, which would also tend to increase the size of the cheese. However that may be, as you increase the percentage of fat in cheese you get a richer texture of cheese, or a cheese that does not dry out so much. You get a cheese that is quite soft and by putting in a larger amount of water, the water dries out very soon and the cheese cracks on the shelf. Perhaps you have not noticed the difference so much, but if you will put a cheese of that kind and a full cream cheese side by side you will notice that the full cream cheese does not dry out and crack as fast as one made from skimmed milk. If you will take the market reports you will find that there is a difference in the price of the cheeses, and if you figure it out it figures right back to the amount of fat that you had in the milk in the first place, so much per pound of butter fat. That is the criterion in estimating the value of milk or cheese.

President Scott: I am very sorry to close this discussion so suddenly, but our time is waning and there are two other speeches on the program this afternoon. I would suggest, however, that as many of you as possible avail yourself of this invitation on the part of Professor Decker to visit the dairy school at the Ohio State University. Professor Decker and his assistants will be there to show you about and will undoubtedly give you a large amount of information relative to the matters which have been discussed here today. I now have the pleasure,



ladies and gentlemen, of introducing to you a lady who is known to many of you, Mrs. Mary E. Lee, New Plymouth, O.

Mrs. Mary E. Lee, New Plymouth, O., then addressed the Institute on the subject:

#### THE TRAVELING LIBRARY; ITS POSSIBILITIES FOR THE RURAL COMMUNITY.

By MARY E. LEE.

The establishment of traveling libraries marks a new era in intellectual development. Hitherto, libraries were confined, for the most part, to the cities and large towns. Here also were found art museums, well equipped reading rooms and the thousand and one establishments for mental culture and enjoyment. The country, which most needed the stimulus, friendship and consolation which converse with master minds give, was deprived of these opportunities. Occasionally, circulating libraries were established, but the lack of adequate funds, sometimes the unwise selection of books, doomed the attempt to failure. It has been left to the last ten years to develop the system of traveling libraries, so that every rural community, no matter how remote from the capital, may enjoy the benefits arising therefrom.

When we realize that the average school life of our children in this state does not exceed six full years, and that these years are not always wisely employed, it will be seen how essential it is that the boy and girl be supplied with wholesome, stimulating literature. Literature that will encourage them to greater efforts, create in them an enthusiasm for study, and supply them with the necessary helps to continue some particular line of study. Usually the child has some particular hobby—the love of birds, or plants, or of rock and soil formation. Without the aid of books, which Dryden calls “spectacles with which to read nature,” he soon loses his interest in these things, and in most others that will contribute to a healthful, intelligent existence. The traveling library makes it possible for him to obtain helpful books on every conceivable subject and to gratify his curiosity concerning the life about him. Thus his mind, instead of rusting out, grows brighter and brighter, as new fields of thought burst on his view. With what new light he views the common experiences of life! Shakespeare opens up new vistas of thought; Milton discourses of Paradise; Emerson and Thoreau reveal nature in her most beneficent mood; while Dickens, Scott and Thackeray supply him with fiction of the rarest kind. That which was dark and dull before becomes, in the light of their presence, beautiful and majestic. Each day adds a new interest to life, unlocks another of nature's secrets, and lo, instead of a dull, dispirited youth, we find him thrilling with thought, a worthy citizen of a worthy state.

The traveling library offers exceptional opportunities to our common schools. We all know that text books are merely outlines of studies; they do not attempt to supply aught but a guide to work, the subject of study needs to be elucidated and rendered interesting by special works on that topic. By means of the traveling library these helps are supplied; moreover the need of books is recognized and the school board is encouraged to supply the schools with works of reference and, as the demand increases, supply standard works. Even after a school library is established, the traveling library stands ready to supply current works, thus keeping a continual stream of new thought flowing into the rural community. The little ones are ennobled and refined by the constant companionship of books. They look upon them not as a luxury, but as a necessity, as friends to whom they can go in joy and sorrow, and find sympathy, consolation and companionship.

Our traveling library is especially rich in agricultural works. There are to be found the works of Henry, Storer, Armsby, Stewart, Bailey, Plumb, Miles Chamberlain and others, who have devoted their best thought, quickened by complete preparation, to the solution of farm problems. There also are extensive works on landscape gardening, adapted either to the purse of the millionaire or the small cottager. These are books which the average farmer cannot afford to buy, but which he cannot afford to do without. Constantly additions will be made, as new, meritorious books are issued. Here is a matter of peculiar interest to the farmer. His agricultural papers have created in him a desire for more extended, concentrated study of farm problems. It is here he can find the teachers of the teachers, the quintessence of agricultural lore, and it is his, his by right of purchase; he need only to place himself in the channel of inspiration and education to receive all that he is fitted to receive.

There are also a few works on domestic science. More will be added as the demand increases.

A few years ago, Dr. Strong said: "Few suppose that these years of peaceful prosperity in which we are quietly developing a continent, are the pivot on which is turning the nation's future. And fewer still imagine that the destinies of mankind, for centuries to come, can be seriously affected, much less determined, by the men of this generation in the United States. But no time appreciates its own place in history. Several years ago Prof. Austin Phelps said: 'Five hundred years of time in the process of the world's salvation may depend on the next twenty years of United States history.'"

The truth of these prophecies is seen in the momentous problems that have arisen in the last few years, problems that require the best statesmanship the world has ever produced, to solve. Each individual man or woman is engaged in their solution. They cannot be dodged, they press themselves upon us and emphatically demand an answer; the longer the solution is deferred, the more complex and difficult they become. It matters not whether we will to take part in the rapid march of time and events. The very fact that we are sentient human beings renders us a party to whatever is done in our own country. We are compelled to be actors against our will. How needful then, that we give due heed to the times that are masquerading before us; that we study them from the standpoint of the philosopher and statesman, not of the politician. Able minds have been reading the signs of the times, and have put their observations and suggestions on record. The library supplies the result of their study. It behooves us to put ourselves in touch with these minds, and to profit by the lessons they teach.

The country is engaged in the solution of the problem of the city. We read of our national and municipal ills, and long for the power to redress their wrongs. We have the power; we need the light to use it. Over 80 per cent. of the great leaders in finance come from the farms; send these business men into the city with sturdy characters, strong wills and clean consciences. A very large percentage of our leaders in thought come from the farm; create in them strong, robust characters that will resist the many temptations thrown in their way. Thus and thus only can the country help the city and thereby the nation. How can we develop these characters? None others have so great opportunities. All nature conspires to teach the need of truth and uprightness, nobility of purpose, and the inevitable, unchangeable law that we shall reap what we sow, that the sureness of retribution, be it for good or ill, is only equalled by its justice. Add to this interpretation of nature's laws, by prophets, poets and seers. Round and complete the whole by keeping steadily before the child's mind the achievements of great and heroic souls. Then will he be led to emulate their example, and to follow their precepts.

What kind of books can you get? Just imagine a great library filled with books on every conceivable topic, and you will grasp an idea of what is to be found therein. The traveling library is simply a great state library placed at the disposal of every citizen of the state. It is kept up by the people and should be enjoyed by them. All that is necessary to get the books is to send in an application, indicate the kind of books wanted, pay the transportation charges both ways, rarely more than one dollar and twenty-five cents, often less, use the books six months and return them.

I have indicated but a few of the many, many possibilities opened up to the rural community by means of the traveling library. Every lover of good books will readily see the immense advantages to be derived from it. Parents and teachers, having the greatest good of the children at heart, will be anxious to avail themselves of the wondrous opportunity to secure the choicest thought of all ages for the little ones as well as for the grown ups in the neighborhood. How many bright boys and girls the country has! What glorious possibilities are in store for those whose intellects are trained to do the work the world demands! I know of no aid to this intelligence so practical, comprehensive, and of such utility as that offered by our traveling library.

I cannot close this paper without paying special tribute to the earnest, helpful spirit with which our state librarian and his noble wife have inaugurated and carried on this work. No state has a better system than Ohio. In no state is a higher class of literature sent out. Our librarian insists that only the choicest books be sent. What their influence will be, who can estimate?

At the conclusion of her address, Mrs. Lee said: I want to say in connection with this subject that our State Librarian has asked for an appropriation for the extension of the Traveling Library System. As you know there was an appropriation of four thousand dollars made two years ago. The State Librarian now asks for six thousand dollars in order to extend the work of the traveling library, and I hope that we will all earnestly work to secure this appropriation. We have with us this afternoon Mrs. Galbraith, the wife of our State Librarian, who will be pleased to answer any questions which may come up in regard to the Traveling Library.

President Scott: You have all listened to a very able discussion of this question, and the matter is now in your hands for further questions either to be asked of the speaker, or of the lady to whom she refers, Mrs. Galbraith.

Mr. C. H. McCormick, Gallia county: Mr. President, I want to congratulate the Committee on Program in having some spirit of progression about them, and I want to congratulate this Institute upon the attendance here today in comparison to what some of us saw a few years ago. It was my pleasure to attend a meeting of this Institute in this hall a few years ago when there were perhaps a score of gray beards in the hall and scarcely a young man to be seen. I was struck this morning upon coming in here to see the number of young people in attendance and to see the spirit of progression shown by the Program Committee in having recognized our helpers, the ladies, those to whom we are so greatly indebted for the success of any undertaking. I am glad to see a number of ladies present

here this afternoon and to listen to this able paper which has been presented to us by our sister. I hope that the Program Committees in the future will look to it that the ladies are properly represented, not only in our local institutes but also in our State Institute. They are worthy of our recognition and they will make these institute meetings of much more value and interest if they are given a part in the proceedings. (Applause).

Mr. O. O. Zehring, Montgomery county. I would like to ask on what conditions these books are obtainable?

Mrs. Lee: Mr. President, I think Mrs. Galbraith has the system thoroughly in hand and is here and willing to answer all such questions. I would therefore suggest that the inquiry be referred to her for response.

Mrs. Galbraith, Columbus: The books are obtainable simply upon application. The application forms are furnished by the State Librarian to all who apply for them. The books are sent out free of charge except transportation both ways.

Dr. W. I. Chamberlain, Summit county: I want to speak for a moment on the practical value of this Traveling Library. My good wife at Hudson is President of a History Club, and as I go back and forth to Cleveland every day, and have a membership in the Case Library, I do considerable lugging for that History Club in the way of books for reading, but their greatest help after all, probably, is from the State Library. I signed, I remember, a bond for one hundred dollars, I think, for the safe return of books and I have not had to pay it yet. There has been a constant interchange of books and simply the freight to pay upon them. That History Club, now for six or eight years, beginning before the traveling library was established, has had the benefit of books free of charge except transportation. And they have obtained the very best books that they have needed for pursuing that particular branch of study. It has, in our township, been of very great value although we have access to other libraries as well, and to several good private libraries in the township.

Mr. C. W. Freeman, Miami county: I want to say that there is another side to this question which the farmer needs to look at in regard to the Traveling Library. It was my privilege to help introduce this system in the Grange of Ohio. In examining the libraries over the State I found but few volumes in regard to progressive farming or agricultural subjects. I have noticed that the majority of our libraries established over the State are selected by school teachers. Now, I am not working against the school teachers, but they have been selected in view of the cultivation of a literary taste. For instance I found in one library of seven thousand volumes but six books directly or indirectly on the subject of agriculture, and we can gain a knowledge, it seems to me, that we can gain in no other way, by the State Traveling Library. We

found upon investigating the list of books early in the work but few books upon the farm or agricultural subjects; we recommended several and they have been procured as fast as means would permit. Now we find any number of books in the library but we need more books expressly for the purpose of the farmer and upon agricultural topics, and for that reason I would be delighted to see an additional appropriation granted. I do not know just how much is necessary, but sufficient to help balance up the libraries throughout the State by giving agricultural topics a fair proportion. I have found in looking for books in different libraries that we can not get the books we want for farmers and which we ought to have, and for that reason I say we need an increased appropriation, and should see to it that books relating to agriculture should be recognized by having a fair proportion. (Applause).

Mrs. Lee: Mr. President, will you kindly give me the opportunity to say just one word? We had in our neighborhood last year a traveling library consisting of, I believe, forty books. I counted up the value of those books; they were valued at about seventy-five dollars, and the total cost to us for their use was one dollar and four cents for transportation. In the list of books we had Storer's Agriculture, and there has been one set of Storer's Agriculture purchased in our neighborhood after examining those that were in the traveling library. There were a number of Bailey's works, and a large number of other agricultural works, but the State Librarian says that farmers do not call for them. Brother Freeman suggests that the teachers and professors in selecting books have not been accustomed to select those upon agricultural subjects, and this may be one reason why they have not been selected. I think one reason is they feel that the works are too hard to read, that they deal in technical terms. The fact is that farmers will have to get to thinking in scientific terms if they expect to make a success of their calling. It is just as easy to think and talk of butter fats and proteine and carbo-hydrates in relation to foods as to think and talk of corn meal and bran and straw. All of these things are of practical value to the farmer and he must certainly know that it is essential for him to become acquainted with the terms that are used and know what they mean, and these agricultural books furnished by the State Library afford an excellent medium for that work. I am sure if you send for agricultural works you will get them. I have found an extensive list of books upon these subjects, including Johnson's works, and others, and there is a great list of books in the library which could certainly be sent out if the patrons of the library desired to read them. As it is they remain upon the shelves of the library because there is no call for them. They are there and if you want them all you have to do is to send and get them. If there is an extra appropriation the librarian will add such books as are called for just as fast as possible. He is very anxious to have these applications go out.

President Scott: I think the suggestions that have been made by those who have spoken upon this subject should be embodied into a resolution and submitted to the Committee on Resolutions for it to report upon tomorrow. We will have to hasten along with our program as it is growing late and there is still another address which we desire to listen to before we adjourn.

We will now hear an address from our friend and brother, Professor Augustine D. Selby, Agricultural Experiment Station, Wooster, Ohio, whom I now have the pleasure of introducing to you.

Professor Augustine D. Selby, Agricultural Experiment Station, Wooster, Ohio, then delivered the following address on the subject

#### THE RESULTS AND VALUE OF THE STUDY OF PLANT DISEASES.

(Illustrated by Stereopticon)

It is a happy opportunity to present the claims of one's chosen branch of research before the State Farmers' Institute of Ohio.

The study of Plant Diseases, that is of Vegetable Pathology, has not been carried on for such length of time as that of Vegetable Physiology with which its pursuit is closely interwoven. As the Physiology of Plants is the study of plants in normal action, in their ordinary life operations, so to speak, and the science of the Diseases of Plants has to do with abnormal or unusual life actions of plants due to unsuitable soil, inadequate soil food, unusual weather stress, the attacks of parasitic fungi, the parasitism of worms, insects, etc., it follows that these two lines of botanical study are very closely interconnected. An adequate knowledge of how plants normally subsist and of their course in health, is the proper basis for a study of the diseases of plants. The vegetable pathologist, like the physician, must first acquaint himself with the one line of knowledge to prepare for the other.

As Botanist of the Experiment Station I am charged with certain duties, to investigate plant diseases with their remedies, and it is the purpose to-day to give an answer, imperfect and inadequate as it may prove, to a possible question as to the "Results and Value of the Study of Plant Diseases."

The farmer, the fruit grower, the executive officer and the legislator may each properly inquire what are the results and what the value of this study and research?

The answer I shall give will have particular reference to Ohio and the work in Ohio, as you may well expect.

In a not very remote past blight, rust, smut and mildew were either inexplicable visitations, or a matter of course, to be suffered when their injuries were inflicted. Study has shown us that plant diseases are a matter of law, just as other operations of nature, but with laws of behavior of a distinct character. These conceptions and the further truths developed by greater knowledge, show that the grower need not remain a passive sufferer where his crops are assailed, but should be an active combatting agent, armed with the agencies of knowledge and the implements, materials and processes brought to his hand by the study under discussion. As one of the results of this study is there any person here who will deny that, laying aside all the financial gain accruing from this work, and it is very large, the consciousness of the power of self help this research has now yielded the farmer and fruit grower, is in itself a most effective result in elevating and dignifying the noble occupations of husbandry?

In our country and in our own state the study of plant diseases has been pursued for but little more than a decade, particularly if we have in mind the

broad application of the subject; generally speaking it has arisen and developed under the Agricultural Experiment Stations founded on the national appropriations of the Hatch Act, which became available in the spring of 1888. To give a clearer notion of the relations of various facts in this evolution of the science of plant disease applied in the field I will outline a brief series of events:

#### EVENTS OF STUDY OF PLANT DISEASES.

In 1861, De Bary of Germany published about parasitic fungus of potato rot.  
 In 1874, Sorauer of Germany published his Handbook of Plant Diseases.  
 In 1875, Farlow of Harvard published on potato rot in the United States.  
 In 1876, De Bary presented a paper before the Royal Agricultural Society of England on potato rot.

In 1876, Farlow published a life history of the black-knot fungus of plum and cherry.

In 1878, Burrill of Illinois announced the discovery of the bacterium of pear blight.

In 1880, Burrill published inoculation experiments with pear blight bacillus.

In 1880, Frank of Germany published his Handbook of Plant Diseases. (Remedies not prominent.)

In 1882, Millardet of Bordeaux, France, visited Médoc in that province, Gironde, and found vineyardists using a paste mixture of lime and copper sulfate on grapevines.

In 1883-4-5, Millardet experimented with Bordeaux mixture (*bouillie bordelaise*.)

In 1884, Arthur of New York published on pear blight.

In 1895, Millardet published the Bordeaux mixture as a successful fungicide.

In 1886, F. Lamson Scribner became Chief of the Section of Vegetable Pathology, United States Department of Agriculture.

In 1887, Scribner was suggesting reduced strength of Bordeaux mixture.

In 1887, These copper salts were used on grapes in United States.

In 1887, Hatch Act appropriating for Experiment Stations was passed.

In 1888, Experiment Stations received appropriations from Hatch Act.

In 1888, Value of copper salts to prevent grape rot was demonstrated in America.

In 1888, Jensen of Denmark presented hot water method to prevent smuts of oats and barley, before Royal Agricultural Society of England.

In 1889, Weed of Ohio combined insecticides and fungicides.

In 1889, Kellerman and Swingle of Kansas applied Jensen's smut treatment and potassium sulfid to oat smut.

In 1889, Goethe in Germany, and Weed in Ohio, thought Bordeaux mixture injurious to apples.

In 1890, Galloway succeeded in preventing leaf spots of plum and cherry with Bordeaux mixture.

In 1890, Pammel of Iowa prevented leaf spots of currant and gooseberry with Bordeaux mixture.

In 1890, Jensen's smut work was further applied by Arthur, Kellerman and Swingle.

In 1891, Green of Ohio secured some of the most striking results ever obtained in prevention of apple scab with Bordeaux mixture and other copper salts.

In 1891, Green obtained like results in prevention of raspberry anthracnose.

In 1891, Galloway and Fairchild sprayed pears successfully.

In 1892, Fairchild of Section of Vegetable Pathology secured good results in spraying nursery stock.

In 1892, Lodeman of New York succeeded in spraying for apple scab.

In 1893, Galloway of the United States Department of Agriculture reported successful spraying of potatoes for early blight.

In 1893, Halsted of New Jersey worked out the field treatment for cabbage club-root.

In 1894-5, Jones of Vermont succeeded in prevention of potato early blight.

In 1895-6, Selby of Ohio reported success in spraying peach trees for pustular spot and scab.

In 1896, the same author brought out the successful method of nematode control in greenhouse.

In 1896, Selby succeeded in greatly reducing leaf curl of the peach.

In 1897, Stewart of New York showed that downy mildew of cucumbers is controlled with profit by Bordeaux spraying.

In 1897, Bolley of North Dakota published successful smut treatment of cereals, with formalin.

In 1897, Green of Ohio reported success in using arsenite of soda in combination with Bordeaux mixture.

In 1897, Selby reported entire success in control of leaf curl of peach.

In 1898, Selby and Miller, Waite and others report continued success in spraying for leaf curl of peach.

The many achievements of 1898 and 1899 are all fresh in the minds of well read persons and do not require their history to be stated now.

I may properly remind you that the United States of America is in advance of the rest of the world in the prevention and control of the diseases of plants and of destructive insects. This result may doubtless be attributed to the timely organization of the American Experiment Stations, combined with the intelligence, foresight and energy of American farmers and fruit growers.

We will now point out some of the results of this activity: Apple yields had been decreasing for some years from the effects of apple scab, with no relief in sight. First work had been unsatisfactory. At this time, 1891, Professor Green of the Ohio Station planned field experiments in spraying, upon a commercial scale in a large orchard near Columbus. These experiments were the pioneer successful ones in the profitable treatment of apple scab. At least one book has been written upon spraying in which the author omits to mention these experiments. The public may accordingly be pardoned for failing to remember that Ohio was the leader in this line. Many of these results have been since duplicated outside of Ohio, and many times duplicated in Ohio by the Experiment Station and by fruit growers, without changing in any essential those published by Professor Green the winter of 1891-2. The lesson is just as forcible now as it was eight years ago. In the light of some recent publications respecting the injury to apple foliage from the scab fungus: "In all cases scab hinders development but not always in proportion to the amount found on the fruit." "With some varieties the scab does more damage to the leaves than to the fruit, the Ben Davis being a good example." "In Lawrence county the past season many trees of this variety had lost nearly all their foliage, because of scab, before the fruit ripened." These are three sentences from the original publication (Bulletin, Vol. IV, No. 9, December, 1891). Dilute Bordeaux mixture gave the best results and with the least cost of any spray mixture then used. The strength called then dilute Bordeaux is that still employed for most purposes, namely four pounds copper sulfate and four pounds of lime to fifty gallons of water. With this the profitable combination of arsenites was shown. The practical outcome is expressed in a few brief tables as follows:



TABLE I: EFFECT OF SPRAYING AS SHOWN BY DIFFERENT VARIETIES.

Variety.	Per cent. in first class; free from scab.	Per cent. in second class; somewhat scabby.	Per cent. in third class; very scabby and unmarketable.
Benoni, sprayed .....	85	8	7
" not sprayed .....	4	58	38
Northern Spy, sprayed .....	56	43	1
" " not sprayed .....	7	80	13
Newtown Pippin, sprayed .....	15	74	11
" " not sprayed .....	...	40	60
Rome Beauty, sprayed .....	93	7	..
" " not sprayed .....	1	80	19

Of the varieties included in the table, Rome Beauty showed the greatest number of first class apples, with Benoni second, Northern Spy third and Newtown Pippin last, although the last two varieties change places in the table showing gain of value in market.

TABLE II: RATIO OF MARKETABLE APPLES AS AFFECTED BY SPRAYING.

Variety.	Per cent. marketable.	Per cent. unmarketable.
Benoni, sprayed .....	93	7
" not sprayed .....	62	38
Northern Spy, sprayed .....	99	1
" " not sprayed .....	87	13
Newtown Pippin, sprayed .....	89	11
" " not sprayed .....	40	60
Rome Beauty, sprayed .....	100	..
" " not sprayed .....	81	19

TABLE III: MARKET VALUE AS AFFECTED BY SPRAYING.

Variety.	Value of 100 bushels in market.	Increase in value of sprayed over unsprayed.
Benoni, sprayed .....	\$ 56.70	\$ 28.10
" not sprayed .....	28.60	
Northern Spy, sprayed .....	\$ 65.95	\$ 24.05
" not sprayed .....	41.90	
Newtown Pippin, sprayed .....	\$ 48.91	\$ 26.11
" not sprayed .....	28.80	
Rome Beauty, sprayed .....	\$ 73.44	\$ 33.74
" not sprayed .....	39.70	

The gain in marketable apples was 31 per cent. with Benoni; 12 with Northern Spy; 49 with Newtown Pippin and 19 with Rome Beauty. As will be seen from the last table the market value of the apples was doubled, and in some instances more than doubled, by the treatment. This was at a cost of only about fifteen cents per tree sprayed. Yet these statements omit another element of very great value. I think many of you catch it; namely, that spraying saves the apple crop, or where the unsprayed trees carry fruit, it greatly increases the crop of apples. The results of the experiments of Mr. Cox of Ensee, Ohio, bear on this point. They were obtained in 1891:

"I sprayed about 175 trees (Rome Beauty), small size, in one orchard, eastern slope, altitude about 800 feet above sea level. I selected two trees of the same size as near as I could judge, in the same row and thirty feet apart. Sprayed May 5, 15, June 3 and 23, with frequent rains from June 10 to 22. Picked October 28, 1891. The results are tabulated below:

Treatment.	Total yield in barrels.	No. first class, free from scab spots.	No. second class, slightly scabby.	No. third class, very scabby.
Unsprayed tree....	Nearly 1	None	188	540
Sprayed tree .....	2	540	268	40

"The leaves fell prematurely from the unsprayed tree, and the apples ceased to grow, so they were small and dark-colored, while the ones on the sprayed tree grew to good size and had a very bright red color."

This profit is even more strikingly presented in the spraying results of Mr. Vergon of Delaware in 1894. Two average trees of the same variety sprayed and unsprayed respectively gave—

Unsprayed tree  $1\frac{1}{4}$  bushels of scabby apples, none marketable.

Sprayed, 6½ bushels of fine apples, all marketable.

The figure shows the respective piles of apples.

Apple scab comes with rainy spring weather and if the small apples which drop when they should not, are examined, it will be found that these are spotted by the fungus. Failure of pollination is often charged with the sins of the apple scab fungus.

Yet one more example from the work at the Experiment Station on apple scab in 1897 (Report Ohio State Horticultural Society, 1897, p. 11). It was on the Station orchard at Wooster, the trees of which are about 25 years old. — "The orchard in question has been sprayed five years, except two rows which have never received treatment. Some trees of each variety are in the sprayed portion and some in the unsprayed.

"Taking the average yield, of the sprayed and unsprayed trees separately, we have the following results:—

	Northern Spy,	sprayed,	ave. per tree,	10.0 bu.	Unsprayed,	ave. per tree,	6.4 bu.
Baldwin,	"	"	"	8.5 "	"	"	3.25 "
Pearmain,	"	"	"	3.6 "	"	"	0.75 "
Baltimore,	"	"	"	7.0 "	"	"	3.5 "
Ohio Pippin,	"	"	"	6.6 "	"	"	0.5 "
Wells	"	"	"	5.3 "	"	"	1.00 "
Grimes' Golden,	"	"	"	6.25 "	"	"	1.5 "

"The average per sprayed tree was 6.75 bushels, and of the unsprayed, 2.42. Fifty sprayed trees produced 4.33 bushels of apples more per tree than the unsprayed, which was secured at a cost of not more than twenty cents per tree. In the case of the Northern Spy and Baldwins the actual profit derived from the treatment was more than five dollars per tree."

In this, trees marked "unsprayed" were treated to prevent codlin moth. Please to note the gain in crop, or in other words *that spraying may mean an apple crop — not spraying, no crop.*

Upon this subject of apple scab the year 1899 contributed more evidence of like character with the preceding. Mr. Cox of Lawrence county reports a gain of one thousand dollars on his apple crop, at an increased cost of less than one hundred and fifty dollars, by spraying with the Bordeaux mixture. He sold his apples at two dollars and fifty cents per barrel, while others who had ordinary apples usually received only one dollar and fifty cents per barrel. The possibility of regular crops will doubtless mean prevention of over bearing, the exclusion of certain varieties with a biennial habit, and will require better measures against the codlin moth; but, certainly the conquest of the apple scab is a result of very great value to the entire state. That two dry seasons succeeding each other made spraying give less profitable or negative results, in no wise depreciates the value of this attainment in which Ohio has been the leader. There is no such thing as a three or five crop rotation of the apple orchard — it is a question of "profit or perish."

#### OTHER DISEASES.

Pear scab was successfully treated in Ohio during this year, 1891, and results in consonance with those before referred to were obtained. Pear leaf spot is a newer enemy not amenable to like treatment. A good beginning toward the control of shot-hole fungus of the plum (leaf spot of cherry) was made in the same year. Attention is further called here to some work of the winter in 1897 and to the disastrous indirect winter effects of shot-hole fungus on plum trees in northern Ohio. Many orchards suffered severe defoliation in 1896, the trees blooming a second time in August, and putting out new leaves. The intense

winter cold injured all these trees severely, as shown. This late growth had left unripened wood which was frozen and destroyed. Some varieties (Bradshaw — Niagara, three years old) were killed to the ground, and large trees of other sorts were badly damaged by local freezing of the trunks. In one orchard of this character at La Carne, Ottawa county, spraying experiments showed that three applications of fungicide were effective against the shot-hole fungus — the first made when the leaves are half grown. But the shoots of latest growth, those developing after spraying ceased, were stripped of leaves by the fungus on them, while the other leaves remained sound. I would further call your attention to the beneficial results of treating gooseberry bushes with the fungicide. Gooseberries, in our day, are not a sure crop without this protection. Currants belong in the same category. Study in this line has further disclosed a dangerous fungous disease of the currant, *Tubercularia* by name, which kills off the stems attacked.

I would also allude to the great benefits to grape growers from the results under discussion. Grape-rot, possibly a new sort, evidently quite like white rot, was destructive last season in Ohio. Mildew and anthracnose are always with the vineyardist. Yet this new decay was prevented at Wooster. Thoroughness of effort, as well as knowledge of what to do, is here essential. Traction sprayers are not reliable.

#### PEACH DISEASES.

In this line the work of our Station, largely directed by the writer, is so recent that extended discussion is not required. I would call your attention to the successful treatment of pustular spot and scab of the fruit attained in 1896 and of the prevention of leafcurl, one of the heretofore uncontrolled fungous enemies of the peach orchardist, in 1897 and 1898; the latter year with Mr. Wm. Miller's efficient aid at Gypsum:—

"Number of bushels produced on 165 unsprayed trees.....	11
Number of bushels produced on 119 sprayed trees.....	143
Number of bushels per tree on unsprayed trees.....	0.66
Number of bushels per tree on sprayed trees.....	1.21
Number of bushels per tree gained by spraying.....	1.14
Number of bushels lost by not spraying 165 trees.....	186.45
Average price per bushel.....	\$1.50
Dollars lost by not spraying the 165 trees.....	\$279.67"

We no longer ask, "Can we afford to spray?" but rather, "Can we afford not to spray?" (Wm. Miller, Report Ohio State Hort'l Society, 1898.)

A successful remedy for leafcurl is found by using Bordeaux mixture, especially by early treatment with the spray. Other dangerous diseases are being studied. Among these the crown gall which may be easily purchased unwittingly on nursery trees. Affected trees should be burned. I will pass the quinces which cannot be grown of respectable character without the remedies of the vegetable pathologist. The field crops have not been neglected.

#### GRAIN SMUTS.

In the chronological table attention has been called to the early successful application of the hot water smut treatment, originated by Yensen in Europe, and to the smuts of oats, barley and wheat in Kansas and Indiana, and to the origination of other methods. These have been reapplied as occasion has demanded and this has been true in Ohio. From results of considerable range it would seem that about 6 per cent. of the oat plants in Ohio are on an average, smutted. On Ohio's one million two hundred and fifty thousand acres of oats.

with the actual yield of thirty-six million bushels annually, the return would be one million five hundred thousand more bushels, at least, with the prevention of smut. In other words the annual loss amounts to about four hundred thousand dollars from oat smut alone. By the hot water treatment of the seed grain, or by the sprinkling with formalin, a new germicide, using one pound of the chemical to fifty gallons of water, the smut is practically all prevented. In the latter case the heaps of grain are sprinkled and stirred. These treatments are the achievements of those who have studied the diseases of plants. Stinking smut of wheat, which entails an annual loss in Ohio at times amounting to one-half that from oats smut, is likewise entirely preventible by like measures. And for two years, in 1896 and 1897, when the method was tried, we have also succeeded at Wooster in preventing the loose smut of wheat. This is an ever present disease of the wheat field. Though these black topped, blasted stems of wheat may be infrequent the total loss is considerable from them, when considered in connection with the two million seven hundred and fifty thousand acres of wheat annually grown, and the annual yield of thirty-five million bushels with its millions of money value.

#### POTATOES AND DISEASE.

Ohio potato growers are said to be as numerous as Ohio men of political ability. Certainly the yield in this line is magnificent, or would be were not blight and scab the factors of the potato grower's favorite. Here again we have well recognized achievements in the investigation of plant diseases. We but rarely have the potato rot fungus, concerning which the renowned De Bary gave such valuable facts, but early blight is a frequent trouble. Galloway, Jones and our own Green have shown how successfully the early blight may be treated with fungicides. It is to me a yearly observation that the potato crops at the Station gardens are practically free from the injuries of blight. Spraying is annually practiced. I continue to connect these two facts. All know how successful are the methods of scab prevention, provided the treated seed is planted on clean land. "A princely doubt" may be a less disquieting thing than to spray potatoes for blight, but the "reasonable certainty" of the remedy and the returns keep this sort of treatment for potatoes still in the field. There are yet other problems in potato diseases that are worthy of close study.

#### DISEASES OF VEGETABLE AND TRUCK CROPS.

The cucumber pickle grower is omnipresent, likewise the person who plants nutmeg melons. These plants are recently attacked every year by the downy mildew fungus, not to mention several others. This mildew may be controlled, as has been shown in New York and Ohio. In 1897 the gain in Wayne county from spraying was seventy-five bushels per acre; the preceding year it would have been greater. These crops are likewise threatened by a similar disease, that which makes successive crops of watermelons on the same soil impossible in the South. I refer to soil infesting fungi called fusarium, of species doubtful as yet. And not the least of the results of the work of the vegetable pathologist is the warning on this line of soil infesting fungi. We find the onion set soils about Chillicothe infested, in part by onion smut, which survives for an undetermined period in the soil. This disease has been introduced by continued onion cropping and will doubtless make such cropping unprofitable or impossible, in no distant future. About Berea is the same trouble. The club-root of cabbage and mustard plants tells a similar story, and cabbage has yet a new fusarium trouble in New York that also infests the soil on which this crop is continually grown.

I would point out here, gentlemen, that the study of the diseases of plants will furnish other equally cogent reasons for the rotation of crops besides those

now universally recognized as a part of profitable husbandry. Herein disease sets a limit to the continuation of a single crop on the same soil, indefinitely. I might remind you that the cultivator of plants under glass has brought to notice diseases that are not common out of doors in our climate. These diseases are studied and their control is essential to the successful cultivation under glass, which promises to be such a factor in future food production. We may not grow wheat in this manner but the world under glass would yield an enormously increased food supply. This field has yet new problems ahead of it. In no year since its recognition have more new lines been opened, with their undetermined advantages or dangers than have come to vegetable pathology in 1899.

In the light of past results and their value, expressed by whatever medium of exchange or estimate you may, you will doubtless unite in agreeing that neither the individual grower of plants, nor the collective societies of those who cultivate similar lines, nor yet the commonwealth in which we live, merging all interests, and which we know as the great State of Ohio, can forget or dispense with these labors and results I have so imperfectly outlined before you this afternoon.

President Scott: You have listened to an able discussion on blights, fungi, and other diseases, which are attacking different vegetable and plant growths, and I presume that Professor Selby is ready to answer all questions that you may want to ask him.

Professor Selby: I will be glad to answer all that I can.

President Scott: If there are any experiences or experiments which any of you desire to relate for the information of the members present, the Chair will be glad to recognize you at this time.

Mr. W. T. Barr, Franklin County: In reference to pear blight, I would like to ask what remedy the professor has to suggest. That is one of the diseases in this locality that is almost destroying the orchards.

Professor Selby: Mr. Chairman, we have just passed through in the last decade what may be termed the era of fungicides, one that will doubtless pass into history as the decade in which the external application of sprays for the control of the enemies of plants was perfected, and its application greatly extended. We are just now beginning to enter upon a decade which will be marked by investigation of the diseases within the tissues. This mere investigation of external parasites is not all of the question in the study of plant diseases. We seem to be about getting to the stage when we must consider internal problems. In the study of these internal problems we are just beginning to recognize that enzymes, or oxydizing soluble ferments may play a part, and we are beginning to get a hint of the possible secret of such diseases, as peach yellows, which have heretofore baffled investigation. The pear blight is a disease, the cause of which is a specific germ, but it flourishes in the tissues beyond the reach of the spray, and up to this time just how to control those conditions we have not learned, but we can limit or reduce the risk by burning in the fall of the year all the diseased parts of every species of tree attacked by bacteria and thus prevent

their living over and being ready the next year for redistribution and reinfection.

Mr. A. T. McKelvey, Belmont county: I desire to add a word to what Professor Selby has said. I do not offer a remedy but I shall suggest a preventive. I have a pear tree at home that has been producing fruit for thirty consecutive years, and have been troubled more or less with blight in my orchards. I have adopted the methods suggested by Professor Selby of cutting out and burning up all affected portions. The preventive which I would suggest is this. We have ceased to cultivate the pear orchard; it is in sod and has been for fifteen years, and as a result we have comparatively little blight. Where the orchard is cultivated and the trees stimulated to rapid growth, the blight is far more prevalent and far more destructive.

Mr. Samuel Taylor, Franklin county: I would like to ask whether salting is any protection or remedy against the ravages of pear blight? The reason that I make this inquiry is, that we have salted our Bartlett pears and have been practically free from pear blight. Whether that was the reason for it or not I am not able to state, I merely state the fact. We have salted our pear trees very heavily and those trees which we did salt were practically free from blight. Whether that is any remedy or not I would like to know if the professor is able to state?

Professor Selby: Mr. President, I hardly think so. It may be that the salting, like keeping the orchard in sod, will have the effect of diminishing the growth slightly, rather than stimulating it. It has been demonstrated, as Mr. McKelvey has pointed out, that thrifty growing varieties of trees seem to suffer worse from blight. I think I have answered the question. One peculiar thing to keep in mind in connection with pear blight is the way it spreads. It is spread by the insects visiting the different trees and inoculating the blight into the nectar of the blossom. And if the insects had access to a large supply of old blighted wood where there are exudations containing the bacteria, that would have a tendency to supply them with an additional accumulation. You know it is only the tips that are blighted; the bacteria does not thrive so well in the larger branches of the tree. For some reason its activity is cut off.

Dr. W. I. Chamberlain, Summit county: Did I understand you to say that the illustration which you had upon the screen during the course of your lecture was a fair representation of the size of the gall on the root of nursery stock which had been sent out?

Prof. Selby: Yes, that was a fair representation of the actual size and I have no doubt the stock was billed and paid for.

Dr. Chamberlain: Have you any picture which shows the size of the gall of the man who sent it out? (Laughter).

Prof. Selby: No, I do not know that our arrangements here are sufficient to show that.

Professor W. A. Kellerman, of the Ohio State University, Columbus: The chairman has kindly given me a moment or two in which to state the results of some work along the line that Professor Selby has been conducting, having been engaged in some experiments along the same line. Professor Selby did me the honor to mention my name in connection with the first work in this country that was done in connection with the smuts and the infection of sorghum and broom corn, and I want to say that I have continued these investigations from time to time as opportunity afforded. You must remember that I am occupied wholly and solely with teaching. In fact, our board of trustees has established the rule that no experiments can be undertaken by a professor without their permission. At odd times when nobody was looking on I have slipped out and have attempted to do some work which would tend to advance our knowledge along the lines of smuts. I will state very briefly the result of my experiments. As I say I have been working at it for some time but only at odd times. It takes only a few minutes often to state the result of even a year's work. Professor Selby has been stating in a very few minutes here the result of the work that has taken a score of men a score of years to do. By the way, the work I have done recently has not been reported except before the Academy of Science, which is purely a scientific body; and I was anxious to speak of it here before this representative body of practical men, because it is, after all, simply a practical question and based on the knowledge of smuts. I have experimented with a view of determining the mode of infection of sorghum and broom corn smut. The smut of sorghum is not simply the smut you will find in individual spots. That is one species, but there is also another species of sorghum smut which infects the whole top of the sorghum. When I was working in the Kansas Experiment Station we found there on our grounds for the first time this smut which affects the entire top of the sorghum and converts it into a powdered mass. I was not able to finish my investigations before leaving that state, and for the eight years I have been here, of course, as I explained before, I could not carry on the work except at odd times. I have shown by the several experiments which have been made—that is, several repetitions of experiments—that this smut infects the plant through the seed. I have made a number of experiments in the green house and also some in the field, and have been rewarded by considerable success this year in establishing this fact, and that is my excuse for wanting to tell you what I have been doing lately. My experiments show that the infection was always through the seed. If seed free from smut was planted there would be no smut in the crop, and if seed to which smut was adhering was used the crop was always smutted. I have repeated these experiments until there is in my mind absolutely no doubt in regard to this mode of infection. That is an important point, because it shows to what we must direct our efforts



in order to annihilate, destroy or prevent smut. I think the old Jansen method is much better than any method that has since been devised. One experiment that I have tried was something like this: Professor Hunt kindly put at my disposal the ground which was needed so that I had a number of rows of plants and several hundred stalks growing in these rows. I infected some seed with smut and then planted the same seed not infected with smut, and which I have good reason to believe was free from smut before I planted it. I planted these seeds so infected and those not infected side by side. You are only interested in the result that I got from the sorghum. There was about 70 per cent of smutted heads in the sorghum from the smutted seeds, and in the sorghum from the unsmutted seed there was practically none, may be one or two stalks in a row. At the same time that I carried on this experiment I tried with it the hot water treatment. What was the result? Taking the seed that was infected in both cases I found that by the use of the hot water method there was only about one per cent of the sorghum which was smutted, and where no fungicide was applied I had the usual amount, which varied from 20 per cent up. Another interesting thing which I have not seen recorded anywhere, I infected the broom corn plant in the same way, performing my experiment at the University, and in that case I got 60 per cent of smutted heads of broom corn and about 1 per cent where I had applied the hot water treatment to prevent the smut. Of course the seed was free to begin with. And where there were no spores applied I had no smut at all. I also conducted some experiments to determine whether some of the ordinary fungicides used to prevent smut in oats and wheat, for example, would be equally efficacious here. The conclusion was abundantly verified by the satisfactory results, namely, that the use of hot water effectually prevented the smut. The percentage of smut when ordinary seed was sown was from 20 to even 50 per cent in various plots. But when hot water was used in the usual way the amount of smut was reduced to 1 or 2 per cent and in most cases there was absolutely no smut. These experiments were sufficiently numerous to put beyond doubt the correctness of the conclusions. I had not thought of mentioning this matter until this interesting subject came up. I have pointed out in this brief summary the main points which I wanted to bring before you, and which is in line of the suggestions made by Professor Selby.

Now, will you indulge me in one word further? Do you not want this kind of work that Professor Selby has been outlining to go on? Do you want Professor Selby to devote all of his time to circulating information about what men do in other states without devoting any of his time to original research? So far as he has been afforded the opportunity he has done his work well, and I commend him for it; we believe in that kind of work, but what is going to become of the Station in Ohio,

and in every other state, if they are not afforded an opportunity to investigate for themselves, but spend practically all of their time in disseminating the knowledge obtained by others and repeating the experiments made at other Stations? Why does he not do it? Because you do not give him a chance. You know that he is a chemist as well as a botanist, but he can not prosecute original research thoroughly in both chemistry and botany. There is no chemist who can cover the whole field of chemistry and there is no botanist who can cover the whole field of botany. It requires a greater man to be a botanist than to be a chemist, and do justice to the subject. What were the experiment stations established for? I am not saying what I think, but I will say in the words of another that it was first of all to investigate and to experiment. Repetition of experiments is a good thing, but I question whether the people of Ohio are wise in giving as little as they do to the Ohio Experiment Station which must therefore all be spent in disseminating knowledge. It is a good idea to make that a bureau of information, a very good idea. We want this information disseminated. A few years ago when the Director of the Experiment Station spoke on this same subject, you will remember, he said that at the Ohio Experiment Station it was required to spend all the money that was received from the State in disseminating knowledge, and that they could not lay out a series of observations or experimental work, put a man on that and let him spend his whole time practically on it; it takes a man to do that, it takes time and it takes money.

Professor Selby has but one assistant, a young man that has had scarcely any previous training. While he is a good young man, and Professor Selby puts him to good work, yet he is not provided with sufficient assistance, and I appeal to you, can you not double the amount that the Director asks for, for the Experiment Station? I do not know what he is going to ask for this year, but I am thinking of what was asked for two years ago. If you double that amount, what then? You will give opportunity for special work, for special investigation and original research. I am proud of this State; I am proud of the work of the Experiment Station, and I have the greatest faith in the benefits to be derived by work of this character, because my whole life has been spent in investigations along the line of plant diseases. Look at the great advantages which have accrued in so many different ways as the result of the investigations of this subject. Professor Selby has shown many of them to you today. Why not let some one at the Ohio Experiment Station devote his time to the advancement of knowledge along this line instead of disseminating information already obtained. Gentlemen, we need this, I do not believe the State of Ohio can afford to do without it, but it will take a little money. I say, double the appropriation. How can you do it? You can do it by going to the legislators from your district and asking them to do it, and if you place the matter before them

in the proper light they will grant your request. Ask them to do it and that is all you have to do; ask it with unanimity and you will get it. I want to endorse and strongly endorse — in fact I can not sufficiently endorse — what has been said this afternoon by Prof. Selby with reference to the advancement of human knowledge. I was at the station three or four weeks ago. What do we find in the way of facilities for the prosecution of original research? Professor Selby has inadequate help; he is required to cover too much ground. I was interested in the work and I went there for a special purpose; I found a little bit of an herbarium. He has not time to put into the herbarium what he has collected, but suppose he had collected ten times as much as he has? Just think of the advantages to be derived from such a collection, an herbarium or collection of economic plants, or plants that would show the effects of the ravages of insects and fungi of all kinds. What an opportunity for study could be afforded by getting this material together. There are some things along this line that some of our older men ought to learn. What promise there is in the future when such work as has been presented today can be prosecuted to the fullest extent. The work outlined by Professor Selby has been largely experimental, but we have not had the time or the money at our disposal to obtain accurate knowledge. It is accurate as far as it goes but it is not adequate knowledge; it does not go far enough; it does not cover the ground entirely. I say let the State of Ohio make her mark in the investigation of plant diseases. She will and she can if you but give her the opportunity. (Applause).

President Scott: Is there any further discussion upon this subject?

Mr. W. W. Farnsworth, Lucas county: I wish merely to endorse the words of the last speaker. Perhaps no one in the State has more pride in the work and results attained at the Experiment Station than myself. I have been in a position to realize to some extent the great value of that work and I believe that every dollar which our State has expended in prosecuting investigations at the Experiment Station has already been repaid many fold. And under the wise administration and industrious research that has been conducted there, I believe we can make no better investment than to deal liberally with Director Thorne in his request for an appropriation, whatever it may be, because I know that it is always within bounds, and that the Station will wisely and prudently use the means entrusted to its care. Take for instance the single branch of study referred to this afternoon, plant diseases, and particularly the ravages of diseases and fungi in our orchards; I presume 90 per cent of the farmers in Ohio have apple orchards and I think I am just as safe in saying that at least 90 per cent of those orchards are not profitable. It simply reduces itself to a plain business proposition, if those orchards are not profitable let us make them profitable, or do away with them. And how make them profitable? By simply following the instructions which Professor Selby gave you this afternoon. There are some other

considerations in connection with it which he did not dwell upon, but the main trouble, the most serious difficulty and the chief cause for the widespread failure which stands in the way of success to the apple grower today is the very trouble which Professor Selby has touched upon this afternoon. This is only one of the lines of investigation in which the Experiment Station has been doing valuable work in the past. The Experiment Station has already established a record and made a reputation which the people of Ohio have reason to be proud of, a reputation and a record which is not confined to the borders of our own State but extends throughout the United States, and you must remember that this work has been done in spite of the fact that they have been so greatly hampered by lack of a sufficient appropriation. In conclusion, I hope the farmers of Ohio will see to it that this valuable line of work is prosecuted to the fullest extent. (Applause).

Dr. Chamberlain: I want to agree heartily with the general thought of Professor Kellerman so forcibly expressed, but I think he underestimates the original work that has already been done at the station. I would not have him create the impression that the Ohio Experiment Station is not doing any original work. Help them to some funds but do not discount the exceedingly valuable work they are doing there now. Taking the whole scope of work done there I am free to say that I do not believe there is another experiment station in the United States that is doing more valuable work. Not merely in disseminating information but in original research. I want to say further that Professor Thorne two years ago, as I understood him, did not claim that the principal or the exclusive part of their work was disseminating knowledge. He is as anxious as any one I believe to pursue original investigation.

I want to ask one question, however, and that is this: In the report which Mr. Pierce made of the meeting of the State Horticultural Society, both in the *Ohio Farmer* and in the *Country Gentleman*, he has represented Mr. William Miller, whose results have been thrown upon the screen here today, as speaking slightly of spraying, especially with reference to the codling moth. I cannot understand that it could be a great success with relation to curl leaf and apple scab and leaf blight and not destroy the codling moth. I want to ask Mr. Farnsworth and Professor Selby, whether that report correctly represents what Mr. Miller said? We have always found that Mr. Pierce was very accurate in reporting the substance of what was said. I want to say further in my own orchard for many years I have sprayed and with most exceedingly valuable results, but this year no matter whether the wind was from the north or from the south, no matter whether the barometer stood high or low, it seemed as if almost before I got through spraying the whole orchard, a drenching rain came and washed off the spray, and conditions were such that it seemed almost impossible for me to spray again immediately. I can understand why the codling moth on my trees this year

was worse than for many years before simply because the poison was so diluted before it was fairly dry that it did not kill the moth. The only recourse I can see, or the only remedy, in such a case is to spray again just as soon as the rain is over, and I have resolved among the good resolutions of the new year that next year I will spray and keep that spray on so that it will destroy the codling moth. That is the reason why I ask the question whether spraying has this year proved a failure with reference to the codling moth. I have hardly seen a decent Ohio apple in the market this year.

Mr. Farnsworth: Having had considerable conversation with Mr. Miller on this subject, and having put that question to him, I think I can explain it. I think Mr. Pierce's report was probably correct, but yet did not convey the exact spirit of the discussion. What Mr. Miller intended to say, I think, was that the spraying had not been as successful in preventing the ravages of the codling moth as it had been in preventing damage by scab, and that, to a certain extent, over-looking the damage done by the codling moth, Mr. Miller put it in the strongest possible light in order to attract more attention to that fact. The fact is that this year, as Mr. Chamberlain has said, we did not secure the usual good results, and I am inclined to think in the majority of cases it was due to our stopping the spraying too early in the season, but still I am not yet satisfied that it will not be necessary for us to use some other method in connection with spraying. I do not believe that we can by spraying in the ordinary way entirely exterminate the codling moth. I think it is more than likely we will have to use auxiliary methods, and yet I am very much in favor of spraying not only to prevent the scab but to reduce as far as possible the ravages of the codling moth. I believe that some auxiliary means is perhaps advisable and possibly necessary. We must adopt some means of destroying the moth in the injured and rotten fruit, because the spore will survive in the rotten fruit and unless we can destroy it by some means we cannot secure the best possible results.

Mr. Taylor: We spray our orchards on an average of about twice a year. One of the speakers has referred to the fact that by reason of the heavy rains the spraying did no good. We had the contrary experience. We had but little rain and therefore the spraying staid on our trees and you could see for a quarter of a mile that our orchard had been sprayed. It never washed off the whole season through and therefore we had I think the most perfect lot of fruit we have ever grown. We have at the present time about eight hundred bushels of apples yet in the cellar and I think we have as few apples that were affected by the codling moth as we ever had. Our apples are very perfect and some of the varieties, as you know, are subject to the apple scab in this part of the country, particularly the Rome Beauties, but we have the finest lot of Rome Beauties this year I ever saw, free from apple scab, and almost no wormy apples among them.

Now I would like to ask one more question of Prof. Selby. Whether he considers spraying with the Bordeaux mixture a preventive of the black knot? The reason I ask this question is that the Professor and I had a talk on this same subject a couple of years ago, at Goveport, and he told me that he did not think it was a preventive, or did much good, and if I understood him right in his lecture a while ago he said he thought it was a preventive, and I would like to ascertain whether or not I was wrong in my understanding.

Prof. Selby: Mr. President and gentlemen: I want to thank you for the very marked interest which you have all shown in my feeble efforts—imperfect as I know they were—in presenting this subject. But let me answer my friend's question. Spraying is a remedy if it is done at the right time, when the spores are being distributed; that time is along perhaps in March, but the cheaper way is to cut it all out before the end of February and burn up all the seed and all the spores; Mr. Taylor may have misunderstood me on that, I did not make any reference to the method of prevention this afternoon.

I want to take occasion to thank Professor Kellerman most heartily, not only for the results he has presented, but for the expressions of good will which he has given to the prosecution of the work I am engaged in. I feel just this way, gentlemen, that I am your servant, and that I must spend as much of my time as I can in original research, and when I am not free to do that I must spend it in doing what is required to be done. I was reared on an Ohio farm and I have spent some years in trying to prepare myself for this work and my soul is wrapped up in it. I wish it to go on in whatever way and by whatever agencies it can best go on, and I am always anxious to serve you and always anxious to do whatever I can, in giving information if it is called for, but especially in conducting original researches and investigations along this road of plant diseases. The expressions of good will and the marked interest shown in the work being done at the Experiment Station which have been manifested today will be treasured very highly by me as I go back to my work again. (Applause.)

Mr. Taylor: We have no black knot in our orchards. We have always sprayed and we spray early before the buds put out the first time. We have the old black Morello cherry which never had any black knot I think. Our neighbors, however, have lost all of their cherry trees and most of their plum trees. We have been growing a great many varieties of plums, of course only a few trees of each variety. We have also experimented with quite a number of cherry trees but we have not been troubled at all with the black knot for two years. We did at one time have two or three black knots on a Lombard plum, they were very small, however, and since we have gotten rid of them we have not had any black knot, and I attribute it mainly to the spray, and think that it probably killed the germ.

Mr. G. C. Housekeeper, Wood county: I have two orchards. I never sprayed a tree. I have used the field in which the orchard is located for pasturing hogs for a number of years. The trees are thrifty and the fruit is free from scab or the codling moth, and I attribute it to the hogs running in the orchard.

Mr. Marshall: I would like to ask Professor Selby whether it is advisable after having trees planted that have the root gall to dig up and destroy the affected trees? I am interested in the fruit growing business although I have only commenced, and I would like to know whether I am starting right or not. I notice a few knots on the trees I have planted.

Prof. Selby: What variety of fruit trees do you refer to?

Mr. Marshall: Peach and apple, but apple in particular.

Prof. Selby: On the apple of course we will have to distinguish between the effect of rootache, which is quite prevalent, and these large root galls. With the peach we have that strongly marked trouble that was illustrated in some of the pictures thrown upon the screen, and I am sorry that I was unable to illustrate the gall of the nurseryman who sold the stock. But I would have to have evidence in addition to what I already have been able to obtain to convince me that these trees would ever come into successful bearing. However, if such trees had been planted in an orchard they should be taken out. I would like to suggest to you the value of observation and further study along this line. I know of an orchard near Cleveland, Ohio, where out of fifteen hundred trees bought from a nurseryman who said he bought the trees of somebody else, one half of the peach trees were affected with root gall. I do not believe in any wholesale planting of such trees in the soil. If we could take out these diseased trees and run the risk of getting healthy trees in their place I should take them out, and if possible replace them with healthy trees, and watch them so that we can find out what we do not know along these lines. Indeed I just hinted at the root gall trouble which just now is quite prevalent in Ohio. It is a new form of trouble which we do not fully understand as yet. We have to work on it and work it out, and I hope you will help us in that direction.

President Scott: Gentlemen, it is growing late, but this is your meeting, and this is a subject of vast importance to every farmer in the state, and especially the fruit growers. When you get tired of discussing it the chair will entertain a motion for adjournment, but is in no hurry and is subject to your orders. The Chair has nothing to do but to stay with you and preside over your deliberations.

Mr. Barr: I want to ask Professor Selby one more question. That is in reference to the San José scale, as to whether it is very prevalent now in this locality, and if so, what is our remedy?

Prof. Selby: Now you have the advantage of me; Mr. President, I do not know anything about insects.

President Scott: I will call upon Mr. Owen to answer the question.

Mr. W. H. Owen, Catawba Island: So far as the San José scale being prevalent in this neighborhood, I could not say, but in the northern part of the state in several localities it surely is, and is abundantly increasing from year to year. It is a source of great menace to the fruit industry in the northern part of the state. We have probably had in our section one of the largest outbreaks which has occurred within the state and we have been thinking that we had it under control, but this past season we find that it is even far beyond what we had anticipated and has gone away beyond the bounds that we supposed it would go. The reason of that, I think, is the fact that we have had a long, late, warm season that kept the scale propagating until the winter set in and the probabilities are that there will be an extra litter of progeny upon us this season which we were not expecting. Where they are being systematically handled we find it quite easy to hold them in check, but it is impossible to do systematic work when it is left to the individual farmer. Some farmers will treat them thoroughly and systematically and as well as anybody could wish, while his neighbor, although he may make a pretense at systematic treatment, will leave a sufficient supply for breeding purposes for the neighbor who has been careful, and for this reason it is almost impossible to exterminate them, or even hold them in check.

Mr. Farnsworth: Mr. Owen speaks of the northern part of the state, and having had occasion to travel considerably throughout the state at Farmers' Institutes for the last two or three years, I find that these outbreaks are not confined to any one section of the state, but the entire state seems to be more or less infected, and these spots of exudation are becoming more numerous in every section, so that it certainly presents a very threatening situation to the fruit growers of Ohio; not the fruit industry alone but shade trees, forest trees and all forms of trees, shrubs and plants are in imminent danger.

Mr. George E. Lawrence, Marion County: It was my privilege to visit our Experiment Station within the past week in a representative capacity. I will not undertake at this time to say anything as to what was there, but I do not want to lose this opportunity of heartily seconding and endorsing the feeling which seems to be prevailing in this audience, and to suggest the inauguration of a practical way by which, if necessary, we can support the persons engaged in that work in thoroughly prosecuting the studies and experiments now going on at the Experiment Station. I believe that the farmers of Ohio are not willing to take a back seat in this matter. I believe they are willing, nay more, they are anxious that those engaged at our Experiment Station shall go forward in this good work and carry it to a successful completion. I would suggest that our Committee on Resolutions endorse some such action in their report before our meeting closes.

President Scott: Gentlemen, the hour has arrived when we should .



conclude this meeting. We have had a magnificent feast this afternoon in more ways than one, and tonight, at 7:30 o'clock, this Institute will again convene in the City Hall, which is immediately above the council chamber. A short program has been prepared for the evening session. There was a change made today, by which Mr. W. H. Owen, of Catawba Island, will deliver his address on "Benefits of Co-operation in Marketing Fruits," and Mr. J. Al. Dobie, of Gutman, Ohio, will address you upon the subject "Character as Affected by Country Life." You may now consider yourselves adjourned until 7:30 o'clock this evening.

### EVENING SESSION.

*Tuesday, January 9, 1900.*

The State Farmers' Institute reconvened in the City Hall at 7:30 P. M., President Scott in the chair.

Professor Thomas F. Hunt, of the Ohio State University, Columbus: Mr. President, I did not learn until after the session this afternoon that I had been appointed chairman of the Committee on Resolutions. I should be very glad to serve the Institute in that capacity were it possible. I certainly am indebted to the President for the compliment of being made chairman of this important committee, but I have imperative engagements tomorrow which will make it impossible for me to meet with the committee, or even be present during the session tomorrow afternoon. I do not think it fair either to the Institute or to the committee to have the chairman absent from the deliberations of the Institute at the time the report of the committee is presented. I am therefore under the necessity of asking you to excuse me and to appoint some one in my place.

President Scott: The gentleman has stated the reasons why he cannot serve upon the committee. While expressing regret at this inability to serve, the Chair will excuse him under the circumstances and will appoint in his stead Mr. John M. Jamison, of Ross county.

We will now proceed with the program of the evening. We have with us tonight two gentlemen who will each give us an address. We made a change this morning by which Professor Weber delivered his address at the morning session of the Institute, and in his place tonight we will listen to Mr. W. H. Owen, of Catawba Island, Ohio, whom I now have the pleasure of introducing to you.

Mr. W. H. Owen, Catawba Island, Ohio, then addressed the Institute as follows:

#### BENEFITS OF CO-OPERATION IN MARKETING FRUIT.

When the stockholders of an industry are meeting with successful results in the disposal of their products, little thought or attention is given to competitors along the same line until competition, over-production or under-consumption

depreciates the value of their products to little more than the actual cost price of the same. They then give their attention to methods that will better their conditions, and devise ways and means by which they may reduce the cost price and competition.

How is this change for the betterment of their conditions usually brought about? Invariably through the same channel, by organizations, by trusts and co-operative associations. What is true of the manufacturer in this direction may also be made true with the farmer and horticulturist, in the disposal of their products.

The Californians were probably the first to co-operate in marketing their vast product of fruit. This was really the result of necessity, for their industry rapidly expanded, until their local markets could not consume the enormous production, and they were obliged to seek other and more distant markets. This they found could not be accomplished individually, but through powerful corporations they have succeeded in gaining low rates and improved methods in handling and shipping; how well they have succeeded we all know, and now we find their fruits in nearly every market of the country—even competing with our own products in our local markets. Organizations judiciously managed have placed the Californians in the lead in the way of distributing and marketing their fruit. Through their efforts is due the credit of perfecting the present refrigerator service, by which they are enabled to ship their more perishable fruits even to the great markets on the Atlantic seaboard.

Missouri is fast accepting the profitable teachings and examples of the Californians, and her vast fruit products are now largely handled through companies and shipping associations.

Michigan, having the greatest fruit market in the world at her very door, had no occasion for many years to look elsewhere than Chicago or Milwaukee for her markets. However, the Wolverines have discovered in recent years that the enormous contributions of fruit from Missouri, Southern Illinois and Indiana to these markets, has in a measure forced them to look elsewhere for the disposal of a portion of their products. They now ship hundreds of car loads of peaches annually to eastern markets and the western and northwestern states; this was not brought about, however, until coöperation among the growers in different localities was instituted.

The extreme eastern peach-growing states—New Jersey, Maryland, Delaware, Pennsylvania and New York—are so favorably located in reference to so many large consuming markets that organization to them has not been so paramount to their success as it is to middle and western states. The further from market the greater need of getting together, as the risk increases with the distance.

I will confine my discussion principally to the advantages in organization for handling one of the most perishable of the tree fruits, viz., *Peaches*.

Peach shipping associations have been operated with more or less success throughout the peach belt of Michigan, but in shipping in carload lots, although complying with rigid rules laid down by the association, there was an objectionable feature to the trade, and that was the lack of uniformity of grades and packing. To be more explicit on this point, you have all probably visited some of our various markets during the peach season, and have noticed the very great difference prevailing in grades of different packs. That is, some packer's XX or B grades were just as good as some other packer's XXX or A grade. Therefore, the grade marks of the general run of consigned fruit, where not put up by one set of hands, as a rule are not of very great assistance to the purchaser, and he still is obliged to resort to his judgment and eyesight in making his selections. Now for a shipper to make up a carload of this indiscriminate packing of fruit, where it is packed by many growers, each contributor having a different

way and idea of how peaches should be packed and what kind of packages used—conceding that they are all honestly packed—how is the shipper going to fill that indiscriminate lot of fruit, and can he warrant the packing? The results of loss to the grower on such shipments were most emphatically emphasized to me during the peach harvest of 1898. Not being able to supply the number of carloads of peaches required daily by an eastern buyer, he went outside of our company and purchased of the individual growers, and his prices to these outsiders were invariably from ten to twenty cents per bushel less than the purchase price of the same stock from our company. Asking him why he could not afford to pay as much for the farmers' pack of fruit as for ours, he replied: "Well, we know what we are getting from you, but we have to take chances on the farmers' pack, for you know the rascals among them are not all dead yet."

This serious objection of lack of uniformity confronted the Michigan fruit-growers and has resulted in the adoption of the Central Packing House system by their principal associations. This system was originated and established in the peach industry at Catawba Island, this state, in 1891, and I am pleased to refer to the original Union Fruit Company, for I believe this organization has probably worked as harmoniously and been productive of as good results as any similar association anywhere. The mere shipping association, where each grower prepares his own fruit and delivers it to the association by which it is shipped with other packs and packages, either in car lots or local shipments, is a step in advance over the old or individual method of shipment; but the Central Packing House system is a much greater step in advance over the mere shipping association. The old adage of, "In union there is strength," is most aptly exemplified through the many advantages that may be attained through an organization of fruit growers, organized for the purpose of bettering their conditions in shipping and marketing their fruit. The many discouraging problems that confront the grower in the satisfactory marketing of his product, I believe, are satisfactorily solved through the adoption of the Central Packing House system, at least, such has been my observation through the management of such a company for the past eight years.

Let us for a moment review further a few of the advantages to be attained through such an organization. First, the grower can place his undivided attention to the proper picking of his fruit, which is a very important factor; whereas, it is known that if peaches are picked green, or immature, or overripe, and delivered to the packing house in such condition, no amount of work that may be put upon them can make good, prime fruit of them. The great advantage of the Central Packing House is the superior advantages and inducements it offers to purchasers of fruit in securing a uniform grade and pack. It affords a place where the buyer can select just the grade and kind of fruit that best suits his trade. When the fact is known to the trade that they can procure their supply direct and in any quantity desired, and every package guaranteed to contain freshly-picked and uniformly-packed fruit, even the commission men will come to your doors and buy. Buyers are looking for carloads of uniform fruit and not carloads that are not uniform. This system entirely eliminates the practice of deceptive packing, and gives buyers confidence that they are getting honestly packed fruit. Even are you obliged to consign largely, it will bring better prices on the market, and the commission firms are bound to take better care of your interests than of the individual shippers, because there is more at stake, and the merchant realizes that if he makes a mistake or misleads you in his advices, he will probably not have the opportunity of handling your goods again. The labor saved at both ends, by dealing with one man or corporation instead of ten or fifty, becomes apparent, and the commission man can afford to handle a corporation account for 7 per cent., and it really pays him better, because of work and time saved. And again, buyers after becoming acquainted with your grades, pack and

manner of doing business, can order their supply of fruit intelligently and without the necessity of retaining a representative at the shipping point.

Another great and beneficial effect of such an organization is, through its influence in broadening the field of distribution, it does to that extent disprove the over-production policy. We have found that in our dealings with transportation companies, basket manufacturers, and even the commission man, they lend a more willing ear and correct errors and abuses with greater promptitude when presented by the authorized representative of a company, than for any individual, or small grower presenting a case possessing equally as much merit. Transportation companies consider a well-organized fruit company, working upon sound business principals, in the same light as any other well established business which contributes to their receipts. We, as a company, have found them disposed to grant favors and investigate complaints fairly, while the lone individual, under the old plan of every fellow for himself, would perhaps have remained unnoticed.

Lastly, a recommendation that is appreciated by those that have had the experience in the Central Packing House system, is the fact that it relieves the home and good housewife of that burden which is attendant with the care of the extra help that will now be dispensed with.

Now, as to the expense of organizing under this system, some may raise the objection that it will cost too much to establish a plant; but you will find after careful investigation it will be far cheaper for each to contribute toward a general plant than for each individual to supply himself with a packing house, a grader and other necessary equipments. In the establishment of a Central Packing House, make sure of one point, and that is, provide a building with ample room for receiving, grading and expeditious handling of the fruit. If the requisite amount of floor space is not provided it will necessitate vexatious waiting of the members in taking their turn at unloading their fruit. Do not think that a room with no more space than would ordinarily be used by three or four of the larger growers of the company and equipped with insufficient number of graders, will properly take care of the fruit of twenty or thirty orchards, for it will not, and such conditions will only result in loss, through failure in being able to get the fruit through promptly, to say nothing of the loss of peace of mind of the manager and the growers interested. As for laying down defined rules for organizing, that is a matter which each locality will best work out for itself, as local requirements and conditions vary.

It is estimated that Ottawa county produces nearly one-half of the peach crop of the entire state. This county's product for the season of 1898 amounted to over five hundred and sixty thousand bushels, and the product this past season from less than four townships of the county was over one hundred and sixty thousand bushels.

The season of 1898 will long be remembered by the peach growers of this state, as one of little profit to the grower, owing to the unprecedented yield, and in consequence thereof, the ruling low prices attained for their product. As an example of what has been accomplished in Ottawa county through organization, I would refer you to the conditions and results of 1898. Of the five hundred and sixty thousand-bushel output, the three organizations of the county, The Union Fruit Company, at Catawba Island, The Island and Gypsum Fruit Company, at Gypsum, and The Danbury Fruit Company, at Danbury, packed and shipped nearly one-half of the product. Most of these shipments were made to the distant markets of the east and the interior towns of this state and Pennsylvania, on direct sales at fair prices; while the bulk of the individual shipments outside of the companies were made to Cleveland, Toledo, Detroit and Cincinnati markets on consignment, and very often the returns were insufficient to cover the cost of labor and packages used. Had there been no fruit companies in existence, the larger portion of the two hundred thousand bushels these companies kept

out of our local markets would have naturally been placed there with the rest, and you can imagine the results of all would have been far more disastrous than they were. Some of the individual shippers then complained of barely paying expenses from their peach crop, but I fear under such conditions they would have been badly in debt after marketing their crop.

Now what is wrong with the present system, or more properly lack of system, outside of the already established organizations? Can you name any industry wherein so many hundred thousands of dollars are invested, that is conducted so carelessly as the fruit business of this great fruit-producing state? It is a great wonder to me that the average peach grower should even get the price of his packages in return for his labor.

To make it plain, the average orchardist can not afford himself the facilities for keeping in touch with the trade, and keep posted daily on the changing conditions of the various markets. He is too busy harvesting his crop to study out the best plans and inform himself of the best places to ship, in which he will meet the least competition. And right here I wish to emphasize that word "*competition*," for are we not, every one of us, placing our fruit in direct competition one with another? Again, the orchardist individually, is placed to a disadvantage through his inability to properly distribute his fruit. I say inability, because he has no control over other shipments, and has no means of knowing but that 90 per cent. of the other shippers throughout the county are shipping to the very markets in which he hopes to avoid a glut.

There is surely a way out of this dilemma, and a practical and time-tried way, that I am confident, if universally adopted, would place the product of the orchard on a far more profitable basis than is now being realized. As long as the present careless methods are continued, we may expect to be the victims of our own failure to protect our interests by the positive means within our reach.

If we will carefully investigate the hundreds of trusts or unions that are now in existence in nearly every branch of business, we will find they are all declaring handsome dividends to their stockholders, while prior to their consolidation, in many cases, they were actually running at a loss. What has been true in other branches of business through result of coöperation, to avoid competition and reduce the cost of placing their products on the markets, can also be made true of the fruit industry in the different fruit growing sections of this state. It is not a visionary and undemonstrated theory. It is the furtherance of a co-operative plan that is now in actual, practical and successful operation in some sections of this and other states.

If some of the fruit organizations in this and other states have not proven entirely satisfactory to their members, due to mismanagement, that should not prejudice or deter those interested from investigation of the plan; for there are fruit companies that are thoroughly successful and making money for their members. The co-operative fruit company will succeed if organized and managed upon a business basis, just the same as any other business enterprise requiring co-operation. It is surely the best means in which to conserve the interests of the producer, and we know that the growers' interests can best be served through facilities, which they may own and control.

After thorough local organization has been effected throughout the various fruit producing sections, let us for a moment see what further advantages might be attained in the way of uniting all these companies in each county or section into one powerful corporation.

County consolidation could be successfully accomplished only through the central packing house system, and then not until local organizations had been established and perfected at the shipping points throughout the county. After the establishment of companies at the different shipping points, then the consolidation of all into one powerful union under one management, would place the

fruit growers of this state in possession of the key to the situation of the avoidance of market gluts, competition and distribution.

The carrying out of this plan was instituted in Ottawa county after the close of the season of 1898, and an effort was made to more thoroughly organize the peach growers of the county, with the object of merging all the organizations into one corporation, thus placing the matter of control and distribution of the entire county's output under a single management. This effort failed, however, and now the advisability of consolidating the three companies of the county is being agitated, and possibly this may be effected before the next harvest. To accomplish such an end of thorough organization, it would mean that each locality must enter into the work with a spirit of determination. We must be prepared to join our neighbors in correcting the existing wrongs and surmounting the obstacles and objections that may confront us. We have the power, and we can do it if we see fit. As one of our western horticulturists very aptly states: "If I were compelled to use but one word in designating the remedy for the many evils and disadvantages with which we have to contend, it would be *organization*." Organization leads to co-operation, and organized co-operative effort is the power and influence that is shaping and moulding the financial and commercial interests of the present time. Look where we will, at any business worthy of the name, and we find it compactly united in some form of a union that seeks to make the interests of one the care of all, and the prosperity of all the prime object of each individual.

President Scott: Gentlemen, you have listened to a magnificent paper, one which has pictured out to you some of the evils that have arisen many times by lack of organization and co-operation in finding markets for fruits, vegetables, etc. The question is before you for discussion or to ask questions of the gentleman who has just addressed you. He seems to be thoroughly informed along the line upon which he has talked this evening, and he is now your property for a short space of time. This afternoon you occupied the time to the limit with interesting discussion and pertinent questions, and I hope that you will keep up the good record heretofore made by showing renewed interest in the new topics as they come before you for discussion. Mr. Owen has so exhaustively discussed the subject that there seems to be little left to be said. However, if you desire to discuss it further or ask any questions you are now afforded that opportunity.

Mr. Kelley: Mr. President, it was stated this afternoon that the San José scale was in the northern part of the state. I would like to know if this gentleman has had any trouble in that direction in Ottawa county?

Mr. Owen: Yes, we have experienced an immense amount of trouble, and in fact it is an experience that we do not care to follow up, but we are unfortunately obliged to do so. I would state, if you were not present this afternoon when the subject was brought up, that the San José scale is something that, we have discovered, will gather upon peaches very profusely. That is a point we had not yet discovered until the past year. It does not necessarily follow that the fruit tree is very badly infested when it will go up on the tree and locate there. It seems

to take more kindly to the smooth skinned fruits, and we were always under the impression that the fuzz of the peach was objectionable to it, and that it would not locate upon them to any extent, but our experience this year has entirely changed our minds upon that proposition. There were many bushels of fruit which were withheld from market for that reason. We were not able to place it upon the market. It makes it very objectionable from the fact that it leaves a blemish on it very much like that which Professor Selby described this afternoon, and what might be termed a pustular appearance. It looks almost exactly like a spotted peach — perhaps you are acquainted with the pustular or some other fungus disease — it makes the peach look fully as bad as that. I would say that there were several hundred acres infested with this scale. We, of course, are trying to keep it down and are fighting it as best we can, but it is a very difficult matter, a very serious one, and a very expensive one to cope with. It is more serious to us from the fact that the peach industry is our main industry. We are dependent almost entirely upon peaches for our sustenance and if we cannot raise peaches we cannot raise anything else, scarcely, because our soil is particularly adapted to that class of fruit, to the exclusion of all else, or nearly so. We can not raise grains or cereals in competition with the rest of the state, and this is about the only crop we can propagate to any degree of satisfaction at all. I might say the difficulties we have in handling this scale are manifold; first, the expense to the grower, which is considerable. The grower is obliged to go over his orchards carefully and inspect them, and then he is obliged to supply himself with a spraying outfit, and, of course, in this up-to-date age every fruit grower should be supplied with a modern sprayer. However, we have to provide more expensive outfits than the ordinary orchardist. Then we have to supply ourselves with the material for spraying and the present accepted formula we are using is whale oil soap. There are tons and tons of it used in that district. I know at the present time that there have been anywhere from twelve to fifteen tons sold for this spring's delivery, and that probably does not represent much more than one-half of the amount that will possibly be used there later. We will find it comparatively easy to keep it down if everybody exercises the same precautions, but it is a difficult matter where it has gained a foothold; it is then practically impossible to exterminate it; it is an easy matter to keep it down and you can save your trees where they are just sparsely infected.

Dr. F. B. McNeal, Miami county: I would like to inquire what are the dangers, if any, of transmitting this scale with the fruit when marketing it?

Mr. Owen: In my estimation I do not think there is very great danger of transmitting the live scale with the fruit and especially on the peaches. Of the hundreds of specimens I have examined on peaches alone there is a very small percentage of them that are alive. I think

the mortality when they locate on the peach is very great and they die very quickly. But on the smooth skinned fruits I do not know. My experience is more along the line of peaches and I do not think there is very much danger in transmitting them on the fruit.

Mr. Samuel Taylor, Franklin county: I would like to ask Mr. Owen what is the most satisfactory package for plums and peaches, whether large baskets and crates or baskets of smaller size?

Mr. Owen: I would say that we largely depend upon the preferences of the market which we are seeking. There are some markets that I know, especially around the Lakes, that is Cleveland, Toledo and Detroit, that prefer an open crate basket, while most of the inland markets prefer the old half bushel funnel shaped basket. If you are shipping to the eastern markets you will get more money out of the half bushel Delaware or Jersey basket, as it is called, than you will out of any other form of packing. I am speaking of peaches, but for plums probably the six basket carrier is as nice a basket as any you can get in the market.

Mr. W. W. Farnsworth, Lucas county: It seems to me that the two points which have been made prominent by Mr. Owen in his address are the advantages of co-operation and the absolute necessity of adopting strict business methods in marketing fruit. I see in the hall this evening many veterans who have been advocating co-operation for years, and in the reports of the various farmers' institutes and in the agricultural press we find line upon line and precept upon precept endorsing co-operation among farmers. This address by Mr. Owen is certainly an object lesson which will impress upon us forcibly the advantages of co-operation from a commercial standpoint. We have been told of its advantages in a social way and we appreciate them. But the suggestions made by Mr. Owen bring the matter up in a little different light.

As to the second proposition presented by Mr. Owen, namely, the absolute necessity of strict business methods in growing and marketing fruits, I desire to suggest that in the past we have been too apt to look upon fruits very much in the light of a gift of nature for which we have been duly grateful, taking what we received and securing what we could from the product, and they have been put up in every conceivable form and handled in every conceivable manner. And many of us have thought that if we could sell our small fruits and get a fair price for them without paying regard to the manner in which they are marketed that we were so much the better off, but we did not stop to consider the ultimate result, we did not stop to consider the effect that would have upon our own reputation and our future trade as well as upon the consumption of the fruit in the market. I hold that we can not do justice to ourselves unless we do justice to the purchasers. In other words, in the prosecution of any business, in order that it should be profitable and satisfactory to one party it must be profitable and satisfactory to both parties. If the man who buys our fruit does not find it a profitable transaction he is going to dis-



continue buying very shortly. We must try to make every transaction not only profitable and satisfactory in itself to us but an advertisement which will secure future trade. It has been said that honesty is the best policy. But I do not like to couple those two words "honesty" and "policy" together in that way. They are incompatible, and do not mix any more than oil and water. We might say that honesty is the only true business method, and we should try to please the customer for the time being by selling him an article that will give him a pleasant memory, or, to use a slang phrase, that "Will leave a pleasant taste in his mouth." By so doing we will not only have a clear conscience but have an ever increasing trade. (Applause).

President Scott: There are three or four minutes yet which may be devoted to a discussion of this interesting subject or any further questions which you may desire to ask.

Mr. R. L. Holman, Clark County: I think that such a valuable paper as we have just heard ought to be commended; it strikes the key note, I think, of success. Not only the fruit grower but every other line of farming must come to consider co-operation, because business is done on that line at the present time. In brief, we must have organization which is founded on business principles. The fruit-growers must co-operate; they must have their rules and regulations for packing their fruit, so that no packages can get into the market except those that are put up in the manner designated. That soon becomes known not only throughout this state but throughout other states; not only throughout this country but throughout other countries that depend in any degree upon us for their supply of fruit. Then every local raiser of these fruits can get the benefit of co-operation and get a good price for his product. Whereas, at the present time, A. B. and C. undertake to market their own fruit, and will consign them to commission houses; nine-tenths of the commission houses have no responsibility whatever, and as a result the fruit grower has plenty of trouble. I know that to be a fact for I have had experience dozens of times in settling up claims against such houses. We would like to avoid all of this. The only thing we can do, not only in fruits but in all other products of the farm, is to organize and co-operate, then our goods will go into the market in first class style. It will become known and there will be no trouble in getting fair prices for our product, because we have to bring them up to the standard designated before they are marketed, and then we know they will be recognized in the market and receive the highest price.

President Scott: If there is no further discussion upon this topic we will proceed with the program. I now have the pleasure of bringing to your notice a topic which will interest us all, namely, "Character as Affected by Country Life." I will introduce to you Mr. J. Al Dobie, of Gutman, Ohio, who is one of our co-workers in county institute work and who will proceed to address you upon the topic suggested.

Mr. J. Al Dobie of Gutman, Ohio, then addressed the Institute in a very pleasant and interesting manner on the above subject. His remarks were not furnished for publication.

President Scott: Gentlemen you have certainly had the pleasure of listening to a magnificent address. Mr. Dobie has given us much to think about and I hope we will go away from this meeting tonight resolved that there shall be a better future for the farmer in this country. Tomorrow at ten o'clock we will again convene in the Council Chamber below.

The Institute then adjourned until Wednesday morning at 10 o'clock.

### MORNING SESSION.

*Wednesday, January 10, 1900.*

The State Farmers' Institute convened at the Council Chamber, at 10 o'clock, A. M., President Scott in the chair.

In calling the Institute to order President Scott said: The time has arrived that the deliberations of this meeting should begin. There seems to be a good attendance this morning, and we feel that we are ready to begin the second day of the State Farmers' Institute for 1900 with the good record that we made yesterday, and we hope to be able to maintain it during the two sessions of today.

I find some conditions and circumstances connected with the appointment of the Committee on Resolutions that compel me to reorganize that committee again this morning. I last night accepted the resignation of Professor Hunt as Chairman of the committee, and appointed another gentleman who feels that he cannot accept the position. I will, therefore, this morning, appoint Mr. John Begg of Columbus Grove, as Chairman of the committee. The committee will consist, then, of Mr. Begg, Mr. Farnsworth and Mr. Wallace. If any of you who are present today have any resolutions which you wish to have read before this meeting adjourns you should present them to this committee for its sanction, and it will incorporate such resolutions in its report so that they may be acted upon by the Farmers' Institute.

I also wish to announce on behalf of Dr. Thompson, President of the Ohio State University, who expected to be present today, and to have taken many of you by the hand, that by reason of a death in the family of one of the professors at the University he will not be able to be present. He hopes, however, that all of you who can will visit the University during your brief stay in the city. He will be glad to meet as many of you as choose to go. If a number desires to go in a body he suggests that you telephone him before you start so that he will be ready to meet you and take care of you in showing you the different matters of interest at the University. I wish to say that those of you who have never visited your State University should not lose this opportunity of

doing so; it will certainly pay you. It is the greatest institution of its kind, I believe, almost, in the United States. It has become more thoroughly equipped each year both in college equipment and in professorships and it will certainly pay you who are so deeply interested in agriculture to visit the agricultural department of the Ohio State University and see what is being done there for you. I believe that is all I have to say this morning and we are now ready for the regular program. We have with us this morning a gentleman who has been engaged in swine growing for a long term of years, and who will at the present time address you. I now have the pleasure of introducing to you Mr. John L. Van Dorn, of Crestvue, Ohio.

Mr. John L. Van Dorn, Crestvue, Hamilton county, then read the following address:

#### ARE WE IMPROVING THE BREEDING QUALITIES OF OUR SWINE?

This question, like all others, has two sides, and in the discussion I hope that both sides will be presented.

I shall not use the term "thorough-bred swine," as we have none of that kind, but only pure-bred ones. Forty-five years ago we had no pure-bred swine in this country; the class of hogs at that date had no particular color, they were a large, coarse variety with plenty of size and not so "blocky" or neat as those of the present time.

I recollect one very large, white sow that my father owned at that time that was a very reliable breeder and a great suckler, always of two litters a year. One time in particular, I remember, she had a litter of sixteen nice, thrifty pigs, farrowing alongside of a log in the woods, and raised them all. Her offspring were sought after for some distance around for breeding purposes and sold at from one dollar to two dollars each. Had this sow and her progeny been taken care of as we care for our stock now, she would no doubt have left her mark in the world, as did the Old Harkrader Sow, 950, O, of the Poland-China breed.

About forty years ago we had a hog that was originated near Monroe, in Butler county, and called Poland-China, which was a misnomer, as it should have been called the Miami Valley hog, deriving its name from that section of the country where it was bred. Hogs of this family were spotted and very prolific, good sucklers and mothers, with feeding qualities that were unsurpassed. I remember hearing one of Cincinnati's old pork packers say of a lot of a hundred head that were bred and raised by T. J. Conover and Ayris McCreary that it was the best lot ever sold in the city, being even and smooth with ears as fine as tissue paper, and a good, heavy bone. These hogs were bred for a long time and became very profitable, in fact, the very best hogs our country ever produced, and had our breeders kept in the same line we would be better off today. They were scattered all over the country and soon became a pure breed and a register was started by the Ohio Poland-China Record Company, with headquarters at Dayton.

Several years later I was at the Butler county fair and there saw for the first time a black Poland-China boar pig. He was shown by an old man who was very proud of him and after the pig had taken first premium and sweepstakes the owner stayed right in the pen with him, saying he was not for sale at any

price to any one. This pig became one of the most popular hogs in the country and his pigs were sought for by all breeders. Every pig that was black with white points was in demand for breeding purposes and many that were far superior were discarded and fed off because they were so unfortunate as to have some white spots, and thus, in many cases, the runts were kept for breeding. This was one of the worst mistakes made by Poland-China breeders. I was at the owner's farm about one year later and could pick out every pig sired by that hog; many of them had short ears and other very strong Berkshire characteristics.

The black craze spread like wildfire, and pigs to be sold for breeding must have the white markings only, and this notion is in existence today, to the detriment of the Poland-China hog. Since that time Poland-Chinas have been solid, fine hogs, but with very poor breeding qualities, small litters and not good sucklers, often with no milk, thus starving their young in a few days after farrowing; in this respect they are growing worse every year. The present year is the worst we have yet experienced, no one to my knowledge having raised a crop of pigs that would pay for the trouble and expense entailed.

The black craze still continues and a pig with two or three white spots can not be sold for breeding purposes at the lowest of prices. I recently received an order for a small boar from a man in Maryland; he wanted an animal as perfect as if made to order. I shipped him what I thought would make a first-class hog, but, because he had not quite enough white in his face and not enough on his tail, the pig was sent back to me with a bill of express charges to pay. In my opinion that man has much to learn and before he learns it will injure the breeding qualities of his hogs. This is only one case, but there are thousands of others drifting in the same line and will see where they are only when too late.

President Scott: The subject upon which the gentleman's paper treated is now open for discussion either in the form of questions, or by the statement of any experiences which would furnish valuable information to the members of the Institute. Let us hear from you promptly. We are limited in time this morning. Certainly swine breeders are interested in this subject. The gentleman made one statement, which I should think would bring out some discussion, that from his way of thinking there had been no breeders the past year that had been able to breed hogs at a profit. No doubt from the gentleman's standpoint the statement is correct, but it has not been my experience. What has been yours?

Mr. Davison: Did I understand the gentleman to say that the Poland-Chinas were inferior sucklers?

Mr. Van Dorn: I said that the time is very fast coming when they will not be good breeders and will be poor sucklers. I want to say another thing, that the Berkshires and Chester Whites are drifting in the same line. We are breeding them down too fine. There was a time when they were more prolific than the Poland-Chinas, but as we breed them down finer and get more of a stocky animal they deteriorate in breeding qualities.

Mr. John Begg, Putnam county: Mr Chairman, I believe there is a common complaint among people that they lose prolific characteristics in the ratio of their fine breeding. It is a common complaint among the Poland-China breeders, and I know of farmers who raise hogs for the

market that have dropped that breed and selected another from this cause alone. Now it does seem to me, my farmer friends, that if by breeding we lose the characteristics of the animal which are profitable, we are not improving the animal, but are causing it to deteriorate, as far as its money making qualities are concerned, and if that is true why not put a check to it, or else turn our attention to some other line of breeding or raising and developing the hog in another direction. We keep hogs simply for the money that is in them, or that we can get out of them, and if by this so-called continued improvement we are rendering them less profitable it seems to me we are on the wrong track and should readjust our methods in such a way as to bring about better money making qualities instead of poorer ones.

Mr. Snyder, of Stark county: I think Mr. Van Dorn's paper, gentlemen, is correct. It is not so under all circumstances or with all breeders. There are still breeders in Ohio, and I presume in other states, that have not followed the craze which has swept almost all the profit in the Poland-Chinas out of existence. I want to say that three of the sows I had this spring had thirty-seven pigs, and I think that is a good number. We have always been trying to keep the size and finish in the foreground. Take one of those little block pigs and I would not give a dollar for it. I received two from Illinois and I went up to see them the other day; they were up on my son's farm and they were the finest breeds obtainable, and I told the boy that I would not give a dollar for the pair. They are not worth anything. I believe that the time is at hand when men engaged in breeding the Poland-China will turn the other way; they have gone to one extreme and they will now turn in the other direction. They are wanting the size, they are wanting the growth, and I think the road that the Poland-China men have gone is the road that every other breeder is going at the present time, if my observations are correct. I do not care what breed of hogs it is, they are going the same way. And if the Poland-China men have gone wrong I do not know why others should follow them, unless it is for the reason that at our leading fairs the little, blocky hog that is the most perfect in every way has taken the premium, and people buy a great many hogs by letter and think if they get something of a sweepstake winner they are getting something they want, and that is where they are mistaken a great many times. I have been breeding hogs for about twenty-four years, thoroughbred hogs, and I have always been called a crank on size, and I am not ashamed of it today. I am not ashamed to let any man see my herd. I think we have today just as prolific hogs as we had twenty-four years ago, and while I think Mr. Van Dorn's paper, generally, has been correct, yet it is not always the case. I know different herds which have not gone in the way he suggests.

Mr. J. M. Jamison, Ross county: I have heard Mr. Van Dorn talk along the same line before. I have thought a good deal about the matter as to why the hog seems to be degenerating in the direction which he has

pointed out. There are several explanations of this. Probably one of the first is the tendency at the fairs on the part of men who exhibit their hogs to get something particularly fine, rounded up in every way, to satisfy the eye perfectly. I believe it is a notorious fact that the finest show animals cannot be counted on as the best breeders; that the line you run in for the finest show animals is not the line for producing first-class breeding animals. Particularly is this so in reference to the sow; the sow that has been a first-class show animal is never expected much of as a breeding animal. An old Poland-China breeder that I used to meet at Dayton at the swine breeders' institute told me that he never owned but one sow that was a fine show animal and which was at the same time a first-class breeding animal. The form that is necessary for the first-class breeder is not the correct type for a first-class show animal. He speaks from the breeders' standpoint. Let me speak for a moment from the farmers' standpoint. They complain that the animal has not bone enough. A farmer will get a new breeding animal and in two or three years you will find him hunting a boar of larger bone, showing that he has run his stock down too fine, he wants to increase the bone. Now, my friends, the proper way to increase the bone is not to buy it of somebody else but to grow it upon his own farm, to the size he wants. If a farmer has sows that suit him, let him select from their number a brood sow and improve year by year in the direction he wants. If he condemns that sow or her family and lets them go off the farm and commences with a new sow he loses what he has esteemed of the most value to him. A farmer will get a sow that suits him for two or three years and then he says she is too old. He condemns her and sells her off the farm and probably buys a new one; that sow goes away when she is just reaching her prime. Nine-tenths of the farmers sell their sows just at the time when they are reaching their prime, because they think that they have run them out so that they are of no value. Now, my friends, instead of depending upon the breeder to furnish the bone and muscle for your breeding stock, I would suggest that you grow it on your own place, and then if you get them too large go to the breeder and buy the form you want for breeding purposes; the breeding sow gives the feeding qualities and the male gives the form. I think that all breeders have run too much to color; I think the Poland-China men run too much to color when they try to get the pinkish color. They have lost many good qualities in trying to get this; I believe that this is an error. I think as Mr. Van Dorn does that we go too much to extremes; but I think it can be remedied by the breeders themselves if they properly manage it. If they breed for breeding stock instead of show animals, especially in sows, they are working in the right direction to correct the evil which Mr. Van Dorn speaks of. I use sows on my farm sometimes until they are seven or eight years old, I use them until the pigs begin to fail. Five sows produced twenty litters, and I sold on the market one hundred and

sixty-one head of hogs. No man can complain of that, and we can all get something near to that if we keep our sows to the proper age and if we breed them for breeding purposes and not according to what the standard says should be the show animal.

Mr. Dunlap, Pickaway county: About three years ago I got hold of an old spotted sow — I do not know what breed she was unless it is what is called the Red Berkshire. In three litters of pigs she brought me thirty-seven in number and I raised thirty-six of them. At the same time I had some pure-bred Poland-Chinas, and also some pure-bred Chester Whites, and neither breed had much more than one-half as many pigs as the old Red Berkshire sow. I treated the pigs from all three breeds the same; put them in a feed lot with the cattle and the red sow's pigs outgrew the others almost two to one. I got what I call good Poland-Chinas and good Chester Whites. I know I paid enough to have them good but they were a failure in my case. I would not give the pigs I have from the old Red Berkshire sow mated with the pure-bred Poland-China for any pure-bred Poland-China I ever saw.

Mr. Roudebush, of Clermont county: I think the breeders are making a mistake in this that they have been attempting to make a breeding and a show animal out of the same individual, and the high condition that it is necessary to keep the show animal in is a tax on that animal's vitality, and it is rapidly degenerated until the animal breaks down for want of bone and ceases to be prolific. I agree with Brother Jamison that if we want bone we can grow it and the best way to grow it is to feed the animal common sense food. That is all I have to say.

Mr. Bradfute, Greene county: Mr. Chairman — if I may have the floor — I have not very much to say. What Mr. Van Dorn has said we people down in Greene county are finding to be true in many cases. We have been having serious trouble with our Poland-Chinas owing to a lack of what you might call prolificness. We cannot get pigs enough from our Poland-Chinas. We have not been able to do it for years. I do not know what the trouble is, whether it is because they are too compact or what the trouble is, but I know that we cannot get them, and we have been compelled to do what I would not want to always support in theory; we have been compelled to use Chester White sires on our Poland-China sows in order to get pigs, and we have succeeded by doing it. How long you can keep up this crossing back and forth I do not want to say, and I do not want to argue particularly in favor of it, but if you are willing to commence occasionally anew and buy some new ones you can cross for feeding purposes with success. I am not talking about breeding hogs, but about feeding hogs. If you will cross the Poland-China sow with Chester White sires of good length you can be pretty nearly sure of having an abundance of pigs every litter. I do want to say that in our experience we have not found a better feeding hog than we have secured from that cross. The Poland-China hog is my prefer-

ence as a type but because we cannot get the pigs we are forced to try something else. We have found this cross very successful and I expect to continue it as long as it is successful with us.

Mr. T. C. Laylin, Huron county. This idea, or complaint of lack of body and bone, is something which has bothered a great many farmers and is a matter which many do not, I think, thoroughly understand. It seems to me that the trouble lies largely in the manner of feeding; that the hog has been literally burned up with corn feed. Take the matter of bone in the horse, there are many breeds of horses which possess plenty of bone and they are built upon that kind of feed which produces bone and muscle. But with hogs I think we have been feeding too much for fat exclusively and for show, while if we had been feeding nitrogenous substances for muscle and ash for bone we would not have had this trouble. You take a pig in its youth and feed it exclusively upon the diet that the majority of farmers are in the habit of using — I am not talking about breeders but about farmers — if you feed it upon a corn diet it will be a pig to the end of its life.

Mr. Jones, Delaware county: I would like to ask some gentleman who has had experience on the subject if we have not been sacrificing with the Poland-China too much for the sake of early maturity?

The Chair: Is that question referred to Mr. Van Dorn?

Mr. Jones: Yes, sir.

Mr. Van Dorn: I think we have because that seems to have been one of the main objects in breeding.

Mr. Jones: In order to get them to weigh two hundred pounds at four months old if possible?

Mr. Van Dorn: Yes, that is right.

Mr. S. H. Todd, Huron county: While we are talking about increasing bone and holding up the size of the bone, we have to realize this fact that it cannot be done altogether with feed, for this reason: Everything has its constitutional limit and we cannot create anything by feed. It is created there already and all that we can do is to develop the creation that is there. Now the feed may have something of practical value on that line, but at the same time we have to understand and get the animal that has good bone and breed him along that line, and then develop the bone as best we can. Now as regards prolificness I hold there is one thing that has been in the way of the Poland-China hogs, and that possibly is the reason why they are not prolific. The attempt has been made to secure especially large prices for Poland-China hogs, and brood sows which would produce three or four pigs which would come up to the standard established and hence would bring one hundred and fifty dollars, or one hundred dollars, or fifty dollars, gave profit enough without having any more pigs. That, I mean, was money enough and hence we have allowed ourselves to be content with that number. I believe that this comes largely from selection and we have run down our breeds on ac-



count of the fact that we have not given attention enough on the line of selection. Now, if you please, we have been breeding Chester Whites. I am not here, Bro. Chamberlain, especially to advertise that fact for if I were I know I would have trouble with you. (Laughter). But we simply have been working on that line and we have never allowed ourselves to use a male that did not come from a large litter or a female that did not give us large litters. What was the result? Possibly our hogs are not bred up quite as fine as the Poland-Chinas but they have bred good pigs. A year ago we had seven sows and five of them gave us eighteen pigs each, all living, one gave twenty and one gave twenty-four (laughter and applause). I do not know that there is any great trouble with the Poland-China hogs. For example, some time ago I met Mr. Stump who had just bought a pair of Poland-Chinas and was very much interested in them and he asked me to go and see them and pass my opinion upon them. I did so. He asked me what I thought about them. I said "They are fine looking pigs, but I can tell you better what I think about them when I know more about them." I met him the next year and the first thing I did was to ask him about the Poland-China pigs. "Oh," he said, "that brood sow had a pair of twins and lost one of them." (Renewed laughter and applause).

Mr. Jones: I would like to ask you how you know a dam is going to produce such litters?

Mr. Todd: Simply by knowing how they are bred. We are not producing from a single generation, but we are producing from what is behind it. If we have four generations that have been prolific all the way down we can lay the rule down to a certainty that that sow is going to be prolific as well. But if we have something behind her that is giving three or four pigs then we do not know anything about it.

Mr. Jamison: I would like to ask Mr. Todd how many pigs the sow saved out of the twenty-four?

Mr. Todd: They were all alive but two when they came and she raised ten of them. That was enough. That gave us a chance to select them out and get the best ones. I want a sow to have enough pigs so that I can select them out and get my pick of the litter. We do not want to skimp ourselves along that line. That is what I mean (Laughter and applause.)

President Scott: Gentlemen, this discussion will have to come to a close now. We have occupied all the time we have to spare, for there are three addresses upon the program this morning, and the Chair will endeavor to divide the time as equally as possible. I know it is an interesting and very valuable discussion, but our time is limited.

The next address will be made by a gentleman who has considerable fame in the state of Ohio as well as a national reputation as a sheep and wool grower. He is a resident of Guernsey county, one of the

sheep counties of the state of Ohio. I now have the pleasure of introducing to you Mr. W. N. Cowden, of Quaker City, Ohio. (Applause.)

Mr. W. N. Cowden, Quaker City, Ohio, then addressed the Institute as follows on the subject

#### THE PRESENT AND FUTURE OF SHEEP HUSBANDRY.

The Cabanas of Spain, as they traveled from one part of the country to another, under imperial protection and direction, not always on the highways, but often through the cultivated fields if the government officer so directed, were noticed to have left a long line of fertility behind them. This led the simple tillers of the soil to rather desire the Cabana to pass through their fields, saying that it had a "golden hoof." The sheep has ever since been called "the animal with the golden hoof," and every Ohio farmer that has parted with sheep now knows that the name was correctly given. He has found that fertility departed with the sheep and that to carry forward his farm work he has been compelled to purchase large amounts of commercial fertilizers, the use of which is almost unknown in the counties largely devoted to sheep. Many fields of briars and weeds and bushes now adorn our farms that would have had no place had we retained our sheep, but the pendulum that began to swing away from us in 1884 now seems to be returning and many who parted with sheep are now just as anxious to restock. The *present* of sheep husbandry is brighter because of the darkness that has surrounded it for the last ten or fifteen years. Our experience in these years has made us more easily satisfied now in the line of profits than formerly, but is there such substantial encouragement in the *present* of the industry as to give encouragement for the *future*? I answer, *Yes*, most emphatically. That the pendulum will swing back to where it was in 1884, when it had reached its farthest point, I do not believe, but with present conditions it will swing far enough to give sheep husbandry a place in our farm economy that will at least make it remunerative, where there is adaptation of breed to soil and markets and where the proper care and skill is given. If you ask why it will not swing back to the point reached in 1884, I answer, a combination of reasons will, as I believe, prevent for a long time a return to the former lucrative conditions. Indeed, I am not sure that such profits as we then enjoyed would be desirable again under our changed conditions. Some of the factors that will prevent these former conditions, are the ranch system on the cheap western lands, that very greatly cheapens the production of wool, and in connection with this the invention of machinery by which a substantial garment is made out of the most inferior wool, thus limiting the use of Ohio wool, the best in the world in point of strength, evenness and lustre, to a narrower field. In this connection I also mention the increased use of shoddy. Other changed conditions now exist and I fear will continue to exist, such as the nearness of every part of the world to every other part, and this means that the people thus brought together will trade on equal terms if the government allows and that they will trade anyhow despite any tariff wall that may be erected. These changed conditions logically mean a higher wall is needed, but they too often cause a lower one.

The most discouraging feature in the present conditions is the insufficiency of the present tariff. Under it wool alone cannot be profitably produced; it has proven a greater failure than our Wool Growers' associations predicted. Last March and April wool was within one cent of a free trade basis, that is, wool was worth just one cent more here than in London or Bradford, and at no time has it increased the price of wool more than six cents

per pound, most of the time only about four or five cents per pound, an amount that does not equal the difference in cost of production between this and other countries. I have always contended that if it is the policy of the government to raise revenue from articles imported into this country, the like of which, or a substitute for which, is produced by the American farmer, he should have the full measure of protection on all such articles. The American farmer, in the very nature of things, can be protected only on a few articles, and as he pays tariff on all he buys he should have the full measure when he can have it, that he may go into his own markets on an equality with the foreigner.

I have said the present tariff is the most discouraging feature of our present condition. It is so because of wrong classification and false valuation. (I append to this paper tables showing the very low valuations on foreign wools; first class in grease, sixteen and eight-tenths cents, scoured, sixteen cents; second class in the grease and scoured, fifteen and seven-tenths cents; third class, in the grease, eight and eight-tenths cents, scoured, nine and nine-tenths cents.) Some half-dozen loop-holes, as the skirting clause, admitting washed and scoured wools of second class at same rate of duty as wool of the same class in the grease; the low duty on third-class wool by which it really is admitted at a fraction over one cent per pound, and it then takes the place of Ohio wool; the low duty on shoddy, which should bear a prohibitory duty, as under the McKinley bill, and the state should require an analysis of contents of each piece of cloth sold within its boundaries. The latest danger is the reciprocity treaty lately made with the Argentine Republic, by which, if accepted by the senate, a reduction of 20 per cent. in duties is made on wool, sugar, hides and tobacco, that our manufactured articles may have access to their markets and receive like concessions. The American farmer well knows that no reciprocity treaty with a competing country can mean any good to him. Let no one say that the present handsome price of wool is due to the tariff; the larger advance in other countries, as shown by any paper quoting foreign prices, is conclusive proof that the cause of the advance is to be looked for elsewhere. The apologists of the present tariff have been busy for nearly two years in explaining why wool has been all along and is now from four to seven cents below the importing or competing point. Many and conflicting reasons have been given, but the one great reason is the insufficiency of the present tariff which nominally gives a protection of eleven cents per pound and really gives only from four to six cents per pound. The most common explanation of this difference is in the three hundred and sixty-three millions imported in anticipation of the passage of the tariff bill of August 24, 1897, and this excuse is still doing duty in the back townships. Had such apologists stopped to think that we consume over six hundred and fifty million pounds of wool each year (in the grease), that the above amount would scarcely equal our consumption for seven months, and with our own clip of two hundred and fifty millions added would equal our consumption for less than thirteen months, they would find it hard to see its effects more than two and one-half years after the passage of the tariff bill. The result of the above is that the government is defrauded of revenue, but the great loss is to the American grower, because he has to sell his wool at corresponding prices.

This summer the world found that it was short on two staple articles—iron and fine wool; the price of the former has gone skyward and the latter, statistically as short, should have followed suit. I think it essential in the discussion of this subject to advert to the above facts so that no false security may deceive us.

What of the future? Wool, now short in the world's markets, will be still shorter on account of the war in South Africa. The Transvaal, especially, sent us large amounts of fine wool; there the industry will for a time at least be crippled and perhaps destroyed for many years to come. Australia is one hundred and

forty-three million pounds short on total clip and still more on fine wool because of cross breeding. Argentina, which produces twice as much wool as the United States, has by cross breeding reduced the amount of fine wool more than one-half. It will take from three to five years, at least, under the most favorable conditions, before these countries can again produce the normal amount of wool and in the meantime our prices will be remunerative, at least for fine wool. After these countries have again increased their flocks to the former number, supposing present conditions to continue here, there will come a deluge of foreign wool that will make our production again unprofitable. I have faith to believe, however, that the provisions of the tariff law, of which we now complain will be amended as soon as the real effect is known.

Every night has its morning and every cloud its silver lining and so, as we emerged from the darkness of the recent depression, we have learned lessons of guidance and helpfulness for the future.

The very low prices of mutton during the depression added millions to the number of mutton eaters and since normal prices for mutton have returned, they have still continued to consume it and will still so continue; hence we can increase our flocks, with the full assurance that mutton will always be in demand, and especially baby mutton. As wool will also be in demand for some time to come the growers of the different families of Delaine, which combine wool and mutton qualities, can make no mistake by increasing their flocks.

But what about the poor little wrinkly Merino, so long both king and prince in the American sheep fold? Well, he has his place and it is an indisputable one, too. He is the original type of Merino and other Merinos will deteriorate in density and vigor without constant infusions of his blood. The owners of stud flocks in the middle states must always furnish the ranches with their breeding stock. As this demand will be constant all such breeders should give their best care and skill to preserve the original type, making vigor and stamina first rather than wrinkles and grease.

This long depression has introduced common sense, a necessary commodity everywhere, into sheep breeding and hereafter we may hope it will be pursued along intelligent lines and be a part of our farm economy. Instead of the sheep being a pile of wrinkles and grease, and tender as a hot-house plant, he will be a strong, healthy, vigorous machine to convert grass, hay and grain into mutton, wool and shekels.

TABLE I. VALUATION OF FOREIGN WOOLS UNDER FREE TRADE.

From Bureau of Statistics, Treasury Department, Washington, D. C.

Years admitted.	Class.	Amount in pounds imported.	Valuation.	Average valuation in cents per pound.
June 30, 1896, to July 24, 1897.	1	213,935,394	\$36,766,248	17
June 30, 1896, to July 24, 1897.	2	41,164,446	7,822,767	19.2
June 30, 1896, to July 24, 1897.	3	117,329,770	12,247,943	10.4
Total of the three classes..		372,429,610	\$56,836,958	15.2

Here we have valuations of wool imported under the three classes during the time the Wilson bill was in force when all wools were imported free. The average valuation you will see was 17 cents per pound for first class wool; 19.2 cents per pound for second class wool, and 10.2 cents per pound for third class wool or an average of 15.2 cents per pound for all wools admitted into the United States from June 30, 1896, to July 24, 1897. Now compare the valuation of wools under twenty-seven months of protection.

TABLE II. VALUATION OF FOREIGN WOOLS UNDER THE DINGLEY TARIFF BILL.

From Bureau of Statistics, Treasury Department, Washington, D. C.

Years admitted.	Class.	Amount in pounds imported.	Valuation.	Average valuation in cents per pound.
July 24, 1897, to Aug. 31, 1899.	1	47,175,086	\$7,729,865	16.6
July 24, 1897, to Aug. 31, 1899.	2	4,379,313	1,039,886	23.7
July 24, 1897, to Aug. 31, 1899.	3	153,360,506	14,416,072	9.4
Total of the three classes..		204,914,905	\$23,185,823	11.2

TABLE III. WOOLS IN BOND OCTOBER 1, 1899.

Classes.	1898.		Value cts. per lb.	1899.		Value cts. per lb.
	Pounds.	Value.		Pounds.	Value.	
First Class.						
In the grease.....	23,865,674	\$ 4,142,722	17.8	14,503,504	\$ 2,433,701	16.8
Scoured .....	72,898	12,303	16.8	89,137	14,308	16.
Second Class.						
In the grease and washed.....	43,630	8,599	19.7	409,250	64,354	15.7
Third Class.						
In the grease.....	35,827,345	3,437,223	9.5	32,305,480	2,860,619	8.8
Scoured .....				2,260	225	9.8
Total in bond Oct. 1.....	59,809,550			47,309,631		
Where in Bond.	Pounds.			Pounds.		
Boston and						
Charleston .....	35,441,676			25,213,657		
New York .....	20,727,036			18,812,741		
Philadelphia .....	3,281,009			3,074,165		
Other places.....	359,829			209,068		
Total .....	59,809,550			47,309,631		

President Scott: You have listened to a most excellent paper which refers to one of the more important industries of our state. The matter is in your hands now for discussion for a few minutes. Let us hear from you promptly.

Mr. A. L. White, Muskingum county: Brother farmers, we have been listening for the last few moments to the voice of a shepherd, and without attempting to be rude I endeavored to make a study of the countenances of those present during the reading of Mr. Cowden's address, and I believe I can say that the sentiments expressed in that paper have been received with favor at least by a majority of those present, and with great favor by those who know what it is to be a shepherd. We have not heard that voice so much o'er the hills in late

years as we used to hear it. We have rather heard the restless sound of the tinkling bell and the wild cry of the drover as he hastened away with our flocks. But I am glad that the time has come that such sentiments can be presented to the farmers of Ohio and received with marked favor relative to one of the grandest interests, if not the grandest, that ever gave employment to the children of men, and especially to those who dwell upon our hills and upon our gentle slopes. The gentleman spoke relative to what was going to be presented by the people of the Argentine Republic. They wish reciprocity; they want our steel rails; if they obtain them they will obtain them from people who make one hundred per cent per annum upon their investment, and they wish us to reciprocate by taking wool which costs them scarcely a twelve-pence per fleece. What shall we do with reference to this matter? Have we the power to do anything? I believe we have; I believe also if we had exercised the power we had from first to last the sheep today would not have been so scarce upon our Ohio hills. Then, let us as farmers resolve that, since this industry is one of the grandest and best for the people of Ohio in every way, in the future whenever opportunity affords, we will do what we can as men, honest, true men, relative to this industry. It is wonderful what can be done by a company of individuals when they put their shoulders to the wheel. Individual effort may be weak, but if we co-operate and stand firm in the position we take we can do wonders. Some of you have stood in police court sometimes, and you have seen there a mother, who came to plead for her boy, or a wife for her husband, perhaps, who was charged with crime. That woman might have been unlearned in legal matters, but when she arose to plead for that boy, or for that husband, none of you said, "Sit down, here are eminent jurists who can plead for you." No, she could plead better than any person on earth. Why? Because she had her soul in the work. Let us unite our utmost efforts to bring about an amelioration in our present condition with reference to this industry; let us do our part as true men and we will be amazed at the results we will accomplish. (Applause).

Mr. W. F. Barr, Franklin county: I would like to ask the gentleman that has just taken his seat what that "true part" would be; I am very anxious to know that. He has left us just a little bit in the dark as to what remedy he would suggest. I am satisfied there is a true part to play, and I am satisfied that the farmers are guilty all over this country of not having exercised that true part, and if you would allow me to state what that true part is I would say it was patriotism. He struck the key note when he said it was the rich men who were getting one hundred percent profit for their steel rails, and we were receiving less than twelve percent for our product. That has been the scheme all over this country for many years to make the farmer bear the burden of all the wealth producing interests of the country. (Applause.) They have been combining the manufacturing interests and manipulating the

money interests of this country against the producing interests. There is where our misery lies; that is the situation we are in today, and if we would come to the rescue we must stand shoulder to shoulder. It is not making a speech in this hall and indulging in invective or picturing what we may hope for, and all that kind of thing, that is going to accomplish the result. It can only be accomplished by our own united efforts. If we are going to get relief along any of these lines it will be along the lines that the other people are getting relief. If the farmers will go to the men who have the power to grant the relief and put their hands upon their shoulders and tell them "Give me the relief I demand, or you will meet political death," then we can secure what we want. When we make that kind of a stand we will get our share of what we are demanding. We will not be troubled any more then by those in power ignoring us and making hewers of wood of the producing element of this country in the interests of the manipulators. I do not believe we have suffered enough, gentlemen; I believe God Almighty may make us suffer more and more until we rise up as a man and declare for our rights. He has done that in every country and in every time. Wherever man has obtained his rights he has had to stand up for them and use those means that God has given him for that purpose. Let us no longer listen to the song of the siren that is all the time telling us to be quiet, be quiet, and wants us to expunge from our school books, if you please, everything that is patriotic in the country. Patrick Henry's Address, and the story of William Tell and all such patriotic stories! I do not know if you know it or not, but the very same element that is making fools of us farmers has done that, and has said it is because these things unsettle the minds of the people. Gentlemen, I think we need unsettling. If I have anything to say to the farmers here today it is that if we are not unsettled the sooner we get unsettled along these lines and get aroused to the situation and go to these men who are opposing us and tell them that we want to share in the prosperity which has been theirs, the better it will be for the farmers, but as long as we are willing to let the other fellow manage the machine we must suffer. That has been the issue for the last twenty-five years, to pool the interests of the manipulator, as against the producer. We are the producing element, and we are the only producing element that I know of that has the benediction of Heaven upon it. We ought to be proud of it, and we ought to glory in it, but we ought to exercise the good sense God has given us and use it to our own personal advantage instead of the advantage of the other fellow. (Applause.)

Director C. E. Thorne, of Wooster, Ohio: Mr. President and gentlemen: I would like if possible to add a little by way of enforcing the closing remarks of Mr. Cowden. I have been familiar with the sheep industry in Ohio from my earliest recollection, and I have more recently studied it in connection with the same industry in other countries. Now,

there are a few hard facts which I think we should take home to ourselves in this connection. One of these is that in England there are four times as many sheep to the thousand acres on the farms as there are in Ohio. Another fact to be remembered is that Ohio's annual wool product is something like between three million and four million dollars. Ohio's annual egg product as shown by statistics is over five million dollars without any tariff. Our hens do their work and they cackle and lay and never ask for any protection.

Dr. Chamberlain: But they certainly have a tariff.

Director Thorne: We do not hear the necessity for protection there that we do in the other case. But here is the point, and the great point which I desire to make, the tariff has fostered among our wool growers the idea that protection is essential to profitable sheep raising, and as a consequence when there is tinkering with the tariff, whether up or down, whether the swinging of the pendulum one way or the other, there is that constant unsettling which is injurious to any industry. Now I believe that the tariff has fostered the kind of sheep breeding that Mr. Cowden has deprecated, namely the breeding for wool alone. If it is not wise for us to breed for wool alone we need to realize that point. We need to study what other people are doing, and if England in the entire practical absence of tariff can keep, and constantly keep, several times as many sheep to the area — England right in the center of the world's markets can keep several times as many sheep to the acre as we can — what is the reason? That is the question I want to put before you. Statistics of Ohio have shown that within the last twenty years our flocks have decreased in an enormous degree. Take one single county, the county of Wayne. In 1881 Wayne county had fifty thousand sheep, and in 1897 but twenty-two thousand; there was a loss in those years of twenty-eight thousand sheep; in the same period Wayne county lost eleven thousand cattle; during the same period Wayne county increased its fertilizer bills to the amount of forty thousand dollars a year. Is it wise for us to neglect these points and look for outside protection for our industry? If we can protect ourselves first, I think that is the thing for us to do. I am not deprecating the tariff, if we can have a tariff we should have it; we should have the protection that others have, but is it wise for us to rely upon tariff as the only thing necessary to the fostering of our industries? Should we not look further and deeper than that? (Applause).

Dr. Chamberlain: May I say just a few words?

President Scott: Yes.

Dr. Chamberlain: It seems to me that we have one specific thing before us now, the proposed treaty between this country and the Argentine Republic which has been signed but not ratified, and the question is, shall it be ratified? The present administration was elected by a strong vote which was largely influenced by this very point of protection to wool.



Having been elected thus by the deliberate judgment of the people on that point, it seems to me that the treaty making power — the President of the United States — has no right to go back upon the party record and make any treaty which overturns that popular vote. I regard it as Mr. Cowden does, as a most serious menace at the present time to the wool industry of this state and of the United States, and even so conservative a paper as the "Country Gentleman," which seldom lifts its voice in politics, and almost never in favor of a tariff, has regarded it thus, and it pronounces this treaty, if it shall be ratified, as a treaty made in favor of the millionaire and against the millions. Now I believe that this institute should adopt strenuous resolutions and that the State Board of Agriculture which meets tomorrow should endorse those resolutions, demanding that the settled policy of the administration shall not be overturned, and further, that every man who is interested in the welfare of the sheep industry — as I am not myself individually — shall write to his two senators and to his own representatives demanding that this treaty be not ratified. Your representatives can see your senators and they can interest themselves and prevent the ratification of the treaty. That is the one point worthy of discussion here today. (Applause).

Mr. Larrimer, Fayette county: Would it not be well to have a petition drawn up, and all of us sign it, requesting that this treaty be not ratified, instead of each member writing to his senator?

President Scott: Motions are always in order at such times as this.

Mr. Larrimer: If that be the case, I would like to make a motion to that effect.

Dr. Chamberlain: It seems to me the better way would be to formulate the resolution and give it to the Committee on Resolutions. It would take less time and be more effective.

President Scott: Of course any gentleman, or any number of gentlemen can form themselves into a committee to get up such resolutions and hand them to the regular committee on resolutions which has already been announced. That committee consists of John Begg, W. W. Farnsworth and R. H. Wallace, and any of these gentlemen will receive a resolution of any kind that you want to put before it, and will embody it in the committee's report to the Institute.

Mr. D. E. Williams, Licking county: When will that committee report?

President Scott: Soon after dinner, or immediately following the report of the Committee on Nominations, if the chairman is ready to submit the report of the committee at that time.

Mr. John Begg: As chairman of that committee, I would say to the audience here and to the farmers present that it will greatly facilitate matters and aid your committee in formulating its report upon all matters with reference to which you may desire to have an expression of opinion, if you will act in accordance with the suggestion made by Dr. Chamber-

lain, if those of you who feel that there ought to be some expression of opinion upon any given subject will kindly formulate it into a resolution and present it to the committee, the committee will act upon it in accordance with its best judgment and submit it to this body.

Mr. R. H. Wallace, of Ross county: As a member of the committee may I just add this further remark? We will not know what you may wish unless you tell us. So write out any resolution on any subject that you may wish to consider and hand it to any member of the committee and we will then be able to make a report upon it. Otherwise you know the report must be meager. Do not forget that.

President Scott: We will now close this discussion and proceed with the program.

I have the pleasure this morning of introducing to you a gentleman who really needs no introduction. He is one of the old-time farmers of Ohio, a gentleman who has been raising corn in the county of Huron, in the great state of Ohio, for fifty years or more. I have the pleasure of introducing to you Mr. Seth H. Todd of Wakeman, Ohio, who will now address you. Stand up Brother Todd and see if they know you. (Laughter and applause).

Mr. Todd, before commencing his address, laid out upon the table several samples of corn.

Mr. S. H. Ellis, of Warren county: That is not what you brought up from Southern Ohio last year is it, Brother Todd? (Laughter).

Mr. Todd then addressed the Institute as follows on the subject

#### FIFTY YEARS' EXPERIENCE IN RAISING AND MARKETING CORN.

Gentlemen of this institute; I come before you this morning with feelings of pleasure mingled with those of fear to discuss this important practical question of raising and marketing corn. And, Mr. President, were it not for the fact that our time is short I would like to tell you a story at this point. [President Scott: Go ahead.] Well, it is only an excuse for my not presenting to you a manuscript. I think it would have been well if I had done so, but it largely comes through early training that I have no manuscript, and thus we may see how we may influence one another as we are traveling the road of life. I remember in my childhood days that my parents belonged to a church called the Presbyterian Church, and that as children we were asked to go with them to attend church. We had a minister who indulged in reading from a manuscript and each manuscript would always be to my mind without an end, hence his address would become very irksome and we boys would go to sleep. I remember one morning he presented before us his thoughts, reading as was his custom from his manuscript, and when he got through we all looked up. Why? Because it was so short. He said, however, that he was obliged to make an apology; he said they were raising a puppy at their house and the puppy had gotten his manuscript and had eaten up half of it before he went to church. (Laughter.) Oh, but we were all glad for that puppy. There was a man in the back part of the house who was a stranger. He arose and said, "My friends, I do not wish to intrude; but I would like to know if there are any more of them pups for sale; I want to buy one for our minister." (Great laughter and applause.)

I come before you this morning to present this question, feeling assured that it has been discussed through and through on all sides, and I should be discouraged, were it not for the fact that my mind goes back to the time when the Gospel was first introduced, and I remember what good men and good creatures we have had since. I remember the Sunday Schools where the Gospel has been taught; I remember the Christian Endeavor Societies, and I remember that notwithstanding all this Gospel preaching, Sunday School and Christian Endeavor work, here in the year 1900 there are sinners yet, and hence it is that I am encouraged to talk upon this subject of "Raising and Marketing Corn." (More applause and laughter.)

The first thing I shall notice is relative to the seed, the saving of the seed, because around this will center largely the success or defeat of the individual in raising a corn crop. We have not given attention enough to that, in fact we have come only to give attention and care to our corn as we have seen the stalk, the same as we have only given attention and care to our stock as we have seen the young animals, and leaving them in that most delicate stage and condition, germ life, without care or consideration. Now, that would mean to us that we should select our corn and take great care in the selection, having in our minds the kind of corn we want to produce and at the same time putting it in such condition that we can rely upon every kernel to grow. No farmer who is engaged in the raising of corn today can justify himself in believing that he could indulge in having eighty or ninety per cent. of his corn grow and make the success that he should make in corn raising.

First, as to the ear of the corn, and here I have two samples. This is the Leaming Corn; one man has said that it is too short. I do not think so. Another man said, "Did you not get that in southern Ohio?" We people want to get everything our way and have the best grown where we were brought up. That is one of the great troubles we have in this world; we are not willing that anybody else should do anything, and hence we are trying to lay something in the way of the man that would struggle against every adverse circumstance in the northern part of the state to bring out something that will even beat those that are located in the southern part of the state. (Laughter and applause.) What is there about this ear of corn that should be noticed? The first thing is, it holds its size the whole length, the rows run even; next, the kernel is tolerably deep, and it is what we call the flesh kernel which gives to it great head. You can see that by taking hold of the corn. As you see, the surface of the corn is almost perfectly smooth and level, meaning that there is no vacancy between the rows at the top. It is called the Leaming Corn; we raise it with great success; I am not here to advertise this as seed, for I have none to sell. Here I have another kind of corn. These ears may seem a little shorter, but I want to say to you that this year, with this kind of corn, in the northern part of the state, when we had one of the severest droughts, possibly, that we ever passed through, just at the time when the corn needed water the most, I raised one hundred and fifteen bushels of shelled corn on an acre. Tolerably good corn. (Laughter and applause.)

This corn is what we call the Mastodon Corn. There is only just a little difference in the ripening of that and the Leaming. This year, so far as we could observe, there was just twenty-four hours difference in the two kinds. You see that you can rely upon corn where you can grow this. As you will see the kernels are over the top and the ear is of good size. This year we husked ears that had twenty-six rows around them. This has twenty-two, I think, showing that it is a good kind of corn.

The next question is, when should we save the corn? My father, I will say, gave us good training on this line; that was to gather the seed ears before the corn was cut up, or, if failing to do it then, at the time of gathering the

corn so as to know that we have the kind of corn wanted, and know the kind of stalk it grew upon. My father always put his corn where it would dry off before any cold weather came, and kept it through the winter in a place where flowers would not freeze. What was the result? Every kernel would grow and it had all the vitality it was possible to have, and we would get the best results. It is not possible for a farmer at all times to have his corn just in the condition he wishes it for oftentimes the germ is so injured that one-fifth or one-fourth of the corn crop is destroyed on account of that weakness, and again we have a result even stronger than that. To illustrate, I remember a few years ago we were compelled to plant a field of corn of eight acres, drawing one-half of the corn from the crib. We knew we put the corn up in good condition; we knew it had been thoroughly ripened, and we felt it would grow as well as the corn that we saved for seed. What was the result? The corn we drew from the crib came up but it was two days longer in coming than that we had properly saved; it grew all season through just that much behind the other corn and when we came to harvest the corn we kept that by itself to see what the result was in bushels, and we found that, notwithstanding it was all planted on the same day and all had the same care, we got ten bushels more to the acre from the seed we had saved properly than from that we drew from the crib. This would mean, that if the farmers of the United States made this mistake with all the corn they planted that year, there was a loss of seventy-five million dollars. Furthermore, a test of seed corn, such as we farmers use, is not reliable because the circumstances that surround the farmer's test is such that the corn, whether it has but little vitality or not, will grow, but when it is put out in the field and comes in contact with the different conditions of the ground it will not grow, and hence it is that such tests are not to be relied upon. I repeat that no farmer ought to rely upon a test, simply because it is not conducted so as to be reliable. With this manner of saving the seed and keeping it we can assure ourselves that every kernel will grow, and this means that we need not plant more than just the amount of corn we want. Here is the mistake that my father made. Although he had good seed corn he would justify himself in planting corn, four kernels to grow, three kernels for worms and birds, etc., and then two more for haphazard, and the result was that we were pulling corn all summer, and if there is anything I dislike in connection with raising corn it is this everlasting pulling it out. More than that, we often do not get it pulled out, so that we weaken our crop by having it too thick. Now we want to understand another point which is a fad and which is going the rounds at the present time, and to prove to you how much farmers think of it I will relate a little experience. I was at an institute three winters ago, I think, where a man lectured on corn. He had with him some sample ears, three where the corn was well over the tip end of the cob, other ears where it was off about an inch, and he claimed the way he got that, and with one single experiment, was by shelling off and refusing to plant the corn at the tip end of the ear, and he raised corn with the kernels just as far down as he had shelled off the corn. Nearly everybody in that institute believed the man, and that shows how ready people are to take up with things that are an impossibility, or, in other words, that may do great injury. I undertook to say that it could not be possible, but the audience was showing disapproval and sitting down on me. It had become convinced that the mere statement of that lecturer was the statement of a fact, and yet we all know that it is not true. If it were true to that degree we could keep on shelling off more and more of the tip in selecting our seed corn until we had all the corn off the cob in a little while; if it were true it would mean that by shelling down the corn so as to leave just one row on the cob we could produce an ear of corn with only one row of seed around the butt, and the rest of the ear nothing but cob; that can not be done. We shell off the seed end, but why? So as to

have all the kernels as near a uniform size as possible. We only want to plant — as we plant with a drill — one kernel in a place, and we want to know that that is going to grow, and we undertake to save our seed corn so that the kernels will all be of the same size, and in drilling the corn we can have an even drop and a uniform crop.

Another fad that is going the rounds is that we should plant about three-fourths of our corn at one time and then after ten days plant the other fourth. Why? So as to pollenize the seed end of the ear of the three-fourths of the corn, claiming that the seed end does not come to maturity as quick as the balance of the ear, and hence the pollen is gone before any kernel is started. What an idea that is. What are we going to do with the one-fourth of the corn we plant to pollenize the three-fourths? We are simply throwing away one-fourth of the corn for the purpose of pollenizing a few kernels. There is but little, if anything, in it; hence I would say do not follow any of these fads except as you may give them great consideration and use your best judgment so as not to make a mistake.

Now, comes the tilling of the soil. First, the selection of the field. We prefer a field where clover has grown the year before and where we have harvested the first crop and let the second crop grow, ripen and fall down. We use coarse manure, spreading it over the top in the spring, and then we plow, and here comes a point on which, of course, we will almost all of us have different opinions, the depth of plowing. We have experimented so that we know what we are talking about with reference to our farm, but we do not know anything about your farms. We undertake to say to you to-day — and we have put it through many experiments — that we can get best results by plowing a field that is treated with clover mulch and coarse manure four and one-half inches deep, and no deeper, and we know by measuring the furrow how deep we are plowing. A great many farmers do not know how deep they plow; they guess at it, and guess they are plowing eight inches when they will find that they are not plowing six if they measure. We want to know what we are doing and what our reasons are for this. What reason can we give that we get the best results on our land by following this method? Where it is clay loam and the subsoil is hard clay we argue that we can better preserve the water by doing that; we know there are times when corn has too much water, and we want the water well drained so as to get it out of the way; we know there are times when the corn suffers for water, and we can not get a good crop unless we can have water. What do we do when we plow every furrow? What do we plow it for? Simply that we can mellow the top of the ground and turn the other side out. What do we want to turn the under side up for? So it will act as a dam to hold the water from getting away from us. But, you say, "Let it go away and draw it back by capillary attraction." Here is a point I wish to call especial attention to. I do not believe with the experiments we have made that there is any great advantage to be derived from capillary attraction below the furrow that we plow. To illustrate this point, if you were to take two lumps of sugar and put one in a saucer and apply water to it, the water will rise through capillary attraction to the top of the lump of sugar, then if you lay on another lump it will never come any further until you raise the volume of water above the first lump. I believe that the air space we have between the two lumps of sugar is not as much as we have between the furrow we plow and the ground we leave unplowed, especially so if we are having mulch and coarse manure to turn under. If that be true we can not depend on drawing water from below the furrow which we plow to any great extent. I know there is much difference of opinion on this line; I remember going with Mr. Kellogg to do institute work when he was carrying around a little glass box with double sides and he had a space of three inches about the sides of the box; the box was about a foot high, and about

a foot wide, and he would pour water into it and then ask his audience to watch and see the effect of capillary attraction and to see the moisture rising in the sand that was in the box between the two glasses, and the result was that it would rise right along up—until what? Until the water had all gone from the tin that held the water and just as soon as the volume of water was gone the capillary attraction stopped and the water never raised another hair's breadth, although the moisture at the bottom was sufficient so that you might take up a hand full and squeeze the water right out of it. I was up at Perdue University and Professor Latta was giving an illustration there of the benefit to be derived from capillary attraction in drawing water from the nether regions. He had a long row of cans two feet and a half high filled with earth. Then he had another row of cans with water holding about a 'gallon, and the water and the earth cans were connected by a pipe, and the result was that you could see the moisture rising right up in the dirt, but just as soon as the water ran out then it stopped right there and went no further. I called his attention to it and said, "The water in the bottom of the can is such that the earth is perfectly soaked and still your capillary attraction stops." Now I am not here to say that I do not believe there is much in capillary attraction, but what I do say is that I believe we are depending too much upon letting the water get away from us and attempting to draw it back by means of capillary attraction, cultivating the corn as we do without that water within four inches and a half of the top of the ground when we need water the most. We never get more than two inches of waterfall when we need water the most and rarely have more than an inch at such times. We understand that four inches and a half cultivated soil will hold that water and more too. Then why do we want to let it run away? To draw it back by capillary attraction when we cannot do it? I remember reading what Dr. Chamberlain had to say with reference to some potatoes he planted some years ago. If I do not quote him correctly I hope he will correct me, I am simply attempting to quote from memory. He said he plowed about eight inches deep and turned under some clover mulch and he said he found in the row, if I remember right, a few hills of potatoes that did not give good growth, and he dug down to see what was the matter, and he found there had not been any decay going on there, and the mulch which he had turned under eight inches was just in the condition it was when he turned it under; he attributed it to the dry season, that there was not moisture enough to bring about decay. That is where the trouble comes. You make a dam across a creek and what is going to be the result? When you first throw up the earth the water will go right through it, but let it remain there and the little particles of the earth run together, and if it is soil like ours it will hold water just as well as a jug. By our mode of cultivation, then, we are undertaking to have the lower side of the furrow constitute a dam, and the other side mellow so as to best grow corn.

There is another point I want to bring up in connection with this, and that is, we should be sure to see that we get the best results from the vegetable matter that we turn under, or the manure. What must we have at once? Decay, must we not? Where do we get decay best? By putting it where there is heat. What brings decay? It is simply the action of these bacteria that we hear so much fuss about. What is the reason we do not have decay down six or eight inches in the soil? Simply because the bacteria that bring the decay can not live there. What is the reason our fence posts rot off at the top of the ground? Because that is the home of the bacteria, and they bring the rot and the decay, and without rot and decay we lose largely the benefits connected with our mulch and coarse manure that we turn under. Now if you turn under a piece of timber eight inches deep and cover it over nicely, it will be the same stick of timber twenty years hence and show no sign of decay. Why? Because there is nothing there to bring about decay. Hence to get the best results from vegetable matter

and manure we must place it four and a half inches under ground, and here, I think, comes up one of the reasons why so many advocate spreading manure on top of the ground in the fall of the year, because it leaches and runs down into the soil and they get much better results than if they turned it under eight inches deep. But if they would turn it under so as to bring decay, what would be the result of that decay from the mechanical influences upon the soil? It would make it mellow, put it in such condition that the corn could best take its food from it. That is one of the benefits we get from turning it under so as to get the decay.

Still another point is this. We would be justified in plowing deeper were it a fact that the feeding roots of the corn run deeper. Where do we find the most of them? I suppose all of you who have made an examination will agree that they are found within four and a half inches of the top of the ground. "But," some one says, "I know they will go down deeper." Certainly they will if you provoke them to go down; if you put the food down anywhere within reach no matter whether it is a plant or an animal they are going after it every time. Suppose you plant your corn five inches deep and it throws up a stalk, what becomes of the root? It is carried up about one-half its size until it comes where the roots can best feed the plant, and that is within two inches and a half of the surface, and then it throws out the little rootlets all around. We have side roots down around the kernel, but they feed upon the kernel. The corn, as I understand it, never feeds upon the food that is in the ground until the stalk is above the ground. You never see an animal or anything else producing signs of life until it comes to the top of the ground, then it breathes and lives. The corn throws out these feeding roots and if we have planted it five inches deep there will be three inches of little, inferior roots before the feed roots start out to do their work in feeding the plant. This would suggest to us that nature itself has intended that the corn should first throw out its feeders where it can do the best work in feeding the corn, where the ground is heated and moist and where they can do the best work. We should put our land in nice condition by making it mellow on top so that the water can run down, and by having this mulch blanket to keep the water from going away from the soil by means of evaporation, and thus losing a large percentage of it, by keeping it mellow on top and hard underneath we obtain the best results. Whether or not we are willing to accept it that is what we do when we plow the ground.

The next point is, that we should plant our corn properly. Whether it should be planted in drills or hills is a matter in which I would say, "Do as you please about it," but we plant ours in drills. Why? Because we can get more corn by drills than from hills. Four experiments taught us that there was a difference of from six to ten bushels to the acre on the average in favor of drilled corn planted three and one-half feet apart. Such corn as we have here on exhibition we plant sixteen inches apart in the row. I would say that we are in a hurry to get our corn in in the spring so as to have it in season and hence do not put too much work upon the preparation of the ground, but we cultivate it, or prepare it after the corn is planted, and in doing that we make the ground mellow and at the same time kill the weeds; we can kill the weeds much better before than after they come up. We do not use the harrow, but wait until the corn is three or four inches high and then go in with a two-horse cultivator, using small spring teeth; then we take the Hallock Weeder. Cultivating the corn in this way we have a little ridge right where the row of corn is and we take a Hallock Weeder and go across it; this leaves it level and we follow with the subsequent cultivation. We cultivate just as many times as is necessary to keep the mulch blanket in proper condition and we cultivate, of course, to destroy the weeds. It takes so much fertility of the soil to feed the weeds and we endeavor as far as possible to preserve all of the fertility in the soil for the corn, and

hence as a general rule we are justified in undertaking to kill all the weeds. The reason I speak of this is that I remember in the early days, going back fifty years ago, that some of our farmers said that they could get better results to let the weeds grow. Why? Because of the drainage. They said they could drain the land through the weeds, and although they got only about a half a crop they would not have had any if they had not had the weeds there to take up the water, but that only means that we should have our land properly drained and thus be able to control the water that falls on it.

Another point I wish to bring up is connected with our early training. We spend much time trying to keep the blackbirds and crows and chipmunks from pulling up our corn. I remember setting four-triggered traps to catch chipmunks and going to the field to shoot blackbirds and crows and I remember how the whole neighborhood would be ordered out to hunt the crow's nests so as to exterminate the young crows. I remember how we put up scarecrows of imaginary men in the corn shooting a gun at a crow—and for what? To get rid of the crows and blackbirds, our very best friends, the very best friends we have to destroy insect life, and especially the blackbirds. Since we have been making friends with our blackbirds they come around us expecting to be fed. Either they or some other birds have destroyed the white grub almost entirely so that we have not had a bit of trouble with it for over twelve years, when it used to almost entirely destroy our corn crop. Now, you know the blackbirds will follow you right in the furrow where you have your team, and pick up the grubs as they come in sight. How valuable they have proven themselves, and still we used to shoot at them and kill them and drive them away so as to save a few spears of corn. Now what do we do? In order to save the corn that we have planted we go out and scatter a few handfuls of corn for the blackbirds, and they will never pull a kernel as long as the corn is scattered on the ground. You may say to me that you know better, that they like the corn under ground the best, but I know they will not do it and I am here to say that emphatically. I remember last year we tried an experiment which was most favorable relative to the birds. We had corn on our black land and the crows had already gone there before we had scattered any corn for them and had pulled the corn from a piece of ground about half as large as this room. We then scattered the corn for them upon the ground and they never pulled another spear. Hence if you use a little precaution and take a little interest in the birds and crows you will not be troubled by their pulling the corn which you have planted. You can ride a horse if you want to while you are scattering the corn or ride in your buggy, so that there is not very much trouble connected with it. Had my father known this he might have saved himself several hundreds of dollars injury to the corn crop from insects. I am also here to say to you, knowing what I do about early cultivation of corn, that my father lost hundreds of dollars by deep plowing, destroying the value of the land so far as raising a corn crop was concerned. We know this from actual experience. I might bring up more on the question of the seed but I will not.

I want to urge that we have our rows straight. Not that we can not have just as much corn grow in a crooked as in a straight row, but there is great advantage in cultivating the corn in a straight row and besides it looks so much better, and that is what we farmers ought to pay a little attention to, namely our looks. Do you not know that we look so bad that nobody wants us around oftentimes? That is one of our great troubles. After we have planted our corn we should use the cultivator and the Hallock weeder, or some other good one. For cutting our corn this year we used a corn harvester. I am not here to especially recommend it, but still we got good results from it; we put it up in shocks and seeded the ground to wheat. There was no expense or very little expense outside of driving the drill over the ground in putting in the wheat, and we have as fine



a show for wheat as any wheat field I know; the prospects being good for an excellent crop of wheat which we may possibly have to sell for sixty-four cents a bushel, but I am not going to give any figures on that subject. The reason I do not advise especially the cutting up of corn with a corn harvester is that it binds the corn so near the butt that the top spreads out and lets the water in, and I am satisfied if we had a rainy season this year we would have lost a good deal of corn from being injured on account of its not being properly set up so as to shed the rain as it should.

There is one other matter to which I desire to call attention, and that is this. We have come to the belief that we can get the best results with corn from cross breeding; if we were going to cross we would cross with these two corns here. Why? Because they are quite similar in size, the kernels are quite similar in size, and they are both yellow corn and thus we would not have a mixed corn. You may ask why we would cross the corn? Simply because we get more stamina; I am not going to tell you how we do it, but we do do it. I could say a good deal on this line of cross breeding, for we have given it great attention, but suffice it to say that we do believe that we can get better results and I believe men who have given it attention and thought have come to planting their fruit trees, different varieties scattered through the orchard so as to get the benefit of this cross breeding.

I want to say, my friends, in connection with this cross breeding, it has done a great deal of good because we have come to understand already in the discussion of these questions that we farmers have a great problem on hand, not only in the raising of crops but marketing them as well, and one of the reasons we are not having a fair representation today is because we do not demand it, or in other words we do not merit it. The reason we are not being represented as we should be in our legislature and congress is simply because we are not putting ourselves in a condition to demand it, and that is one of the reasons why we have lost and have not secured more in our favor. We want the farmers to unite and to secure the enactment of proper laws for the protection of our birds. Who is the chief enemy of our birds? It is the sportsman from the city. How about the law relating to stock and to sheep? Look at the law made at the last session of the legislature; its purpose and object was to protect the man who had the bird-dog. What does the law say? It says that I may go out and see a bird-dog tearing one of my sheep to pieces and I may have a gun in my hand with my finger on the trigger, but I must catch the dog and tie him up and make it known to the owner and not shoot him. You may say you would shoot him; then under the law you are no better than the other fellow. The law says, "Whoever shoots a dog through malice"—but what does the word "malice" mean? I have looked it up in the dictionary and it has about forty different meanings. It is the object and purpose of these men to manipulate laws in favor of themselves, and then have a sugar coating over it so that the farmers will accept it, but if we would stand up in our manhood and merit the support of our citizens we would get proper representation and secure equal rights.

I am taking up a little more time than I should, but I want to speak a word with reference to cross breeding. I was talking on this subject over in Indiana, and said, "You will excuse me, my friends, but I do feel a great deal of sympathy for Ohio. I do not believe but what Ohio is justly occupying the position that everybody says she is, namely at the head." I believe that we have the smartest men there are to be found, in Ohio, do not you? You certainly do; you cannot help it. Why? We are doing this Institute work all through the state; we educate our people up to the highest standard and if the people of the United States want a president they come to Ohio for him. You will remember that last year we had seven senators who came from Ohio in the Congress of the United States. And do you know why the people of Ohio are so much smarter

than the people of other states? Just think for a moment. It is from cross breeding, that is all. We represent in the state of Ohio more nationalities than they do in any other state in the Union. I was talking along this line in Indiana by way of illustration, but you know such talk would not go in the state of Indiana as well as it will in Ohio. We had a cranky president at the meeting who was about six feet, three inches tall, and finally one of the professors from an Indiana College who was present at the meeting remonstrated with me and said that I would better be a little careful. When I came to this point of my remarks and claimed that the citizens of Ohio were smarter than the rest of the world because of their cross breeding the president rose right up from his chair, and he seemed to go up about a foot and a half higher than he really was, and he says, "Brother Todd, Brother Todd, don't you know that Ex-President Harrison was from Indiana?" I said, "But, Mr. President, you must remember that he was born in Ohio, he married his wife in Ohio, and we put the stuff in him in Ohio by which he became president." (Great laughter and applause.)

President Scott: It is now five minutes of twelve o'clock and we have not much time for the discussion of this question. I know there are a large number of you who want to get at Mr. Todd with hammer and tongs, especially with reference to the statement he made about that one hundred and fifteen bushels of corn per acre.

Mr. S. H. Ellis, Warren county: I would like to ask Mr. Todd how he measured that corn, whether he measured the whole acre or whether he simply measured eight feet square and then made a calculation for the whole acre?

Mr. Todd: I measured the ground that I grew the corn on. It is a plot of ground by itself and there is just one acre in the plot. We manured it heavily and plowed it four inches and a half deep, and we had plenty of rain in the early part of the season and hence we got a perfect rotting and decay of the manure and the corn made a wonderful growth. If it had not been for the drought that came just in the time it did we might have had one hundred and forty or one hundred and fifty bushels on that acre. (Groans and laughter).

Mr. R. H. Wallace, Ross county: I would like to inquire if he had seventy-two pounds to the bushel or if he had a bushel basket for each ear? The reason I make that inquiry is that some of the farmers in our section have a custom of measuring their corn in a bushel basket and calling each basket a bushel whether it is full or not, because they can not raise enough any other way.

Mr. Todd: I meant a bushel of shelled corn, seventy pounds to the bushel.

Dr. Chamberlain: Did you weigh all the corn that was grown upon the acre of ground?

Mr. Todd: We measured it.

Mr. Ellis: How did you measure the acre of ground?

Mr. Todd: Of course we were quite particular about measuring it, and still there might have been a variation of a few feet. We took a

string to measure it with and it might be that the string stretched a little. (Laughter and applause.) But we endeavored to give it a fair measurement.

President Scott: Gentlemen, we must bring this discussion to a close, and if there are any further inquiries I hope they will be to the point.

Mr. D. E. Williams, Licking county: Mr. President, there is one further question that I would like to ask Mr. Todd, and that is whether he fed that one hundred and fifteen bushels of corn off of that one acre to the sow that had the twenty-four pigs? (Long continued laughter and applause).

Mr. Todd: Well, I think that would have had its influence, and if that sow had been fed off of that corn she might have had even more pigs.

Mr. Ellis: I would like to ask Mr. Todd if the farm he is cultivating is the same farm that his father cultivated?

Mr. Todd: The one where we raise our principal crop is, yes, sir; but not where we raised the big crop.

Mr. Ellis: And yet you say that your father was guilty of deep plowing?

Mr. Todd: Now, there is another thing to be taken into consideration; if that farm had not been subjected in the past to deep plowing whether or not we might have had an additional yield, but as it was my father did not have anything to do with this plot of ground where the one hundred and fifteen bushels was raised. If he had we would not have had as much corn. (Laughter and applause).

Mr. John Begg: There is one question I would like to have Mr. Todd answer seriously.

Mr. Todd: I am answering them all seriously.

Mr. Begg: I know you are in the habit of doing that, Mr. Todd. But I want to ask you now how this corn was planted?

Mr. Todd: It was drilled sixteen inches apart.

Mr. Begg: That would be equivalent to about three stalks to the hill, would it not?

Mr. Todd: Well, possibly a little more than that. I will say in planting this corn that we left the corn fourteen inches apart in this piece of ground to which I have referred. We were putting in all the corn we could and we put two kernels in a hill and then undertook to thin the corn down to one and two stalks, and we got it a little too thick, I think. Now there is another trouble, if it had not been for that mistake we would probably have had one hundred and sixty bushels. (Long continued laughter and applause).

Dr. Chamberlain: In a great many of these big yields which we hear about to the acre it has been found that the ground in many instances has been measured by the owner stepping it off, and I suppose

that Mr. Todd in measuring that acre of land paced it himself with his long legs.

Mr. Todd: Now there comes in another trouble, gentlemen. If my legs had been of the average length there is no telling what the yield on that acre of ground might have been. (Laughter and cheering.)

Mr. Bradfute: We have had a good deal of fun over this, but I want to stand back of Mr. Todd just a little bit. You must remember two or three years ago a leading agricultural paper in Ohio offered a big prize of \$500 for the most corn to be raised on an acre in any place in the United States, and I want to say that the first and second prizes went to Ohio, and my recollection is that the first prize was for one hundred and forty odd bushels of corn to the acre; it was not guess work. It was measured and everything was attested before a justice of the peace.

Mr. Todd: Yes, and there is another thing, if you people want a few more facts. The second prize was obtained by a man who had one hundred and twenty-nine bushels and a fraction to the acre, and it was grown up there by me. (More laughter and cheering.)

President Scott: Gentlemen, we cannot hear any more discussion on this subject unless it is adjourned until the afternoon session. You may now consider yourselves dismissed until 2 o'clock this afternoon.

### AFTERNOON SESSION.

*Wednesday, January 10, 1900.*

In calling the Institute to order, President Scott said:

Gentlemen: The time has arrived when we must proceed with the program. We have considerable to do this afternoon, and we know how we have all enjoyed some of the discussions which have followed the addresses delivered, so that the Chair desires to give you the opportunity of utilizing as much as possible the afternoon. We have some committees to report and we will try and get through with them as soon as possible.

The first report this afternoon will be that of the Committee on Nominations.

Mr. C. H. McCormick, of Gallia County: The gentlemen whom we have selected to be the officers of the Institute for the ensuing year need no introduction to most of those who are present, and perhaps the gentlemen themselves will be more greatly surprised than the members of this Institute because of their selection. We recommend for President, Mr. W. W. Farnsworth, of Lucas county, and for Vice-President, Mr. H. P. Miller, of Delaware county.

C. H. McCORMICK,

A. T. McKELVEY,

T. C. LAYLIN,

Committee.

President Scott: What will you do with this report, gentlemen?

Mr. R. H. Wallace: I move its adoption and thereby the election of these officers.

The motion having been duly seconded and unanimously carried, the Chair declared Mr. W. W. Farnsworth and Mr. H. P. Miller duly elected to the respective offices of President and Vice President of the State Farmers' Institute for the ensuing year.

Mr. W. W. Farnsworth, of Lucas county, being called upon, said:

Mr. President, somebody has said that in order to make a good extemporaneous speech, one must be prepared beforehand. I assure you this honor has been bestowed upon me entirely without knowledge on my part, and the news came to me like lightning from a clear sky. I admit that I assume the office to which you have seen fit to elect me with a great deal of fear and trembling. When I look upon the excellent record made by my predecessors I fear I may not be able to equal them in that regard. I thank you for this honor, for I consider it one of the highest honors to be selected by this representative body of farmers of Ohio to preside over their deliberations. I assure you I shall strive to the utmost of my ability to keep up the high standard of efficiency to which this Institute has attained, and if possible increase its usefulness in the future, with your aid and co-operation. I thank you. (Applause).

President Scott: We will now hear from the Committee on Resolutions if it is ready to submit its report.

Mr. R. H. Wallace, Ross County: Mr. Chairman, the committee is not yet ready to report and begs that you will excuse it for a little while.

President Scott: We will then turn to the regular program of the afternoon.

I now have the honor of introducing to you a gentleman from Harrison county, Ohio, who is a neighbor, a friend and a co-worker in the Institute, and who will address you.

Mr. S. K. McLaughlin, of Hurford, Ohio, then delivered the following address on the subject,

#### THE FARMER'S WIFE.

MR. CHAIRMAN, LADIES AND FELLOW FARMERS:—Public speakers and writers are continually asserting that American agriculture is the foundation rock of our marvelous national growth and prosperity. Admitting this to be true, which we assuredly do, let us inquire what is the most important institution connected with this great industry? Is it our Ohio State University with its valuable and beautiful grounds and magnificent buildings? Is it the different farm organizations scattered throughout our land? We answer, No. The greatest institution belonging to our great industry is the farm home.

It has been said: "However trade may enrich and art adorn our progress this nation dwells largely in the cottages and farm houses of the country." The establishment of the home is the outgrowth of marriage, the home is the sanctuary of the affections, the mother the maker of the home and the wife the

center of its attractions; upon her devolves the responsibility of making home the shrine of contentment and happiness.

The farmer's wife is the most important member of the farmer's family. Farm life may be endured without children in the homes, the husband, even, may be absent much of the time and life be bearable, but where shall I find words to depict the utter incompleteness and hollow emptiness of a farm house, ay, of any home, without the wife and mother? I have uttered but a few sentences and I have encountered the grandest couplet of words in the English language—mother and home. When I but repeat the word mother methinks I strike a tender chord in the heart of every one present. What a flood of memories rush to the brain when we look down the picture gallery of the past with the mind's eye, away back to childhood's days, when at home with mother. "Home, home, sweet, sweet home." Were I to go down into that busy thoroughfare, High Street, and interview some of its successful business men, I would be informed that a very large majority of them were born and received their early training on the farm. It is an indisputable fact that the farm has furnished more great statesmen, more eminent professional men, more successful business men, than have come from all other occupations and callings combined, and we must give the mothers of our country homes the major part of the credit for this splendid showing. Yet against and in the face of this good record, were I to step into a car at the corner of Broad and High streets and ride out Broad to that splendid charitable State Hospital maintained by a great and generous people, I would learn that far too many of those physically wrecked and mentally deranged women in that institution had come from the farm. Now, fellow farmers, if this be true, and there is far too much truth in it, why should it be so?

Much has been said and written, and truthfully so, of the beauty and poetry of life upon the farm, of rearing our children away from the sin, temptation and degradation of the city, out among the grassy fields, flowery meadows and shady woodlands, close to Nature's God; but there is no rose without a thorn, no sweet without its corresponding bitter. The enforced isolation, the inconveniences and burdens of farm life, rest more heavily upon the farmer's wife than upon any other member of the family. Unlike her city cousin she has no Monday night club to attend, no Tuesday night Shakespearean society, she is not always even within reach of the Wednesday evening prayer meeting; but at home, washing, cooking, baking, mending and what not, all the day, and at night tired in body and nerve, but impelled by the love she bears for her husband and children, she works on and on, beyond her strength and the result is too often physical wreck and mental ruin. The boys and girls are home from school, wanting this and wanting that, wanting help in their geography, in their history, wanting the spelling lesson pronounced, wanting, wanting, and always receiving from that self-sacrificing wife and mother. Is it any wonder that daughters reared by such an unselfish creature as this go forth and make our best homes? Is it any wonder that boys taught the eternal truths of honor and habits of industry and economy, with that physique attainable only upon the farm, when they go out into the battle of life forge to the front, and not only grasp the helm of the ship of state, but stand at the head in all the professions. It has often been said that "the hand that rocks the cradle moves the world."

The bravest battles ever fought, the most priceless victories ever gained, were won by the mothers over the evil inclinations of the hearts of the young around the hearth stone, at the frugal board, and before the family altars of our country homes. And still the over-work continues. A story is told of a mother who was brought into court as a witness. When asked what she had been doing on a certain day until eight o'clock in the morning she replied she had prepared breakfast for husband and six children, washed the dishes, swept

the dining room, scrubbed the front portico, sewed the rent in Mary's dress and the buttons on Johnny's coat, was starting to milk, when the judge said, "Stop! do you pretend to say that you did all this in one morning?" "Yes," she said, "I do this every morning." She was ambitious that her children should go to school neat and clean, that her home should be a model of perfection as to cleanliness. For there is nothing lies so near to a true American woman's heart, aside from her character for virtue, as does her reputation for cleanliness. The children go to school five days of the week and to Sabbath school on the Sabbath and meet their playmates and schoolmates for miles around and enjoy life as only youth can, and you, fellow farmer, where are you all these six days of the week? You go to the city, you go to the mill,\*to many, many places. Did you ever notice how quickly you did the morning chores when there was a sale to attend, how you hurried around, asked your wife to tie your cravat and get you clean socks so that your feet would not be cold? And when you came home at night rather late, just in time to get the feeding done before dark, having met and talked with many of your acquaintances for a radius of three miles, what did you find? A good, warm supper prepared by that best of women, your wife. When you had enjoyed that meal and, settling down to further enjoyment, the reading of your daily paper, your wife meekly asked, "Any news, John?" the answer came, "No, nothing of any interest." Yet you spent all day listening to the news of your community and was interested in it. You talked stock, politics, the Philippines, and everything, except religion, and enjoyed it. And yet you could not make the sacrifice of your comfort and ease by spending an hour in trying to entertain your wife as you were wont to do a quarter of a century ago, when she was young, and the bloom of youth had not been swept from her cheek by unremittent toil and, too often, sorrow.

Information derived from our last census indicates a great increase in the population of cities and towns while the rural population in most of the eastern and middle states shows a marked decrease. A learned professor at an institute in one of the best counties of Ohio, stated last week that upon actual canvas he found two-fifths of the farms of the county were occupied by tenants, the owners having moved to city or town. Why this unpopularity of country home and life? One of the most prolific sources of discontent lies in the fact that it is almost next to impossible to get efficient, reliable domestic help in the farm homes; the result is the farmer's wife and daughters are overtaxed.

What is the remedy for this condition of affairs? What shall we to do popularize country homes? Make the home equal to the city or suburban home in comfort, convenience, elegance and surroundings; see to it that your wife has as much labor-saving machinery in the house as you have on the farm; exchange those dusty old stoves and open fire grates for a furnace; bring that sparkling spring from the hillside in pipes into every room in your home; supplant the big, hot range with a nice, blue-flame oil stove; cover your tables with the best modern literature; bedeck your walls with paintings and prints; make the home resound with music; see to it that your wife and daughters use the horse and buggy twice to your once; encourage the motor line to pass your door; establish a neighborhood telephone circuit; petition at once to have a free rural mail route established through your vicinity. Many farming communities already have all these improvements. When the city advantages are brought to the country there will be no desire to leave the old farm for city life. Let me say to you that there is no place so propitious for the establishment of the model American home as out upon the farm.

Robert Ingersoll once said, "I envy the man who lives on the farm upon which his father lived and died, who cultivates the fields over which he played when a boy, and I can conceive of no sweeter place to end life than upon the farm,

away from the mad rush for power, place and wealth." Now it is a common thing for many farmers to be promising their wives that they will be happier in the future, that they will not have so much work next year, that the work hands shall board themselves, that next year they will take a visit and will take time easier and be happier. Fellow farmers, do not deceive yourselves; if you are not happy now, nine chances out of ten you never will be. Now is the time to be happy, and the way to be happy is to make the wives and children happy; do this by doing, not only some of the things which I have suggested, but by many other ways suggested by your own good judgment and better selves.

President Scott: Ladies and gentlemen, you have certainly listened to a magnificent lecture from Mr. McLaughlin, which has no doubt raised hopes for the future as to what this great Republic of ours may be able to accomplish in the golden century before us. We will now have the pleasure of hearing again from the lady who addressed us yesterday. I have the honor of introducing to you Mrs. Mary E. Lee, of New Plymouth, Ohio.

Mrs. Mary E. Lee, of New Plymouth, Ohio, then addressed the Institute as follows on the subject,

#### THE EDUCATION OF OUR GIRLS.

MR. PRESIDENT, LADIES AND GENTLEMEN:—It is not with an entire sense of gladness and self-complacency, that we see the new year ushered in. As we look back over the last fifty years, with its vast expenditures for schools, colleges, libraries, and the various institutions for furthering the cause of free education, we are filled with disappointment. We see jails, prisons, reformatories and asylums crowded. We hear charges of corruption and bribery, and are shocked at scandals. We had hoped by our system of free education, that we could speedily remedy these things. We trusted to our virility and determination that everyone should have as good an education as he was fitted to receive to prevent them. We believed that our schools would turn out earnest men and women, capable of the highest form of self-government. We congratulate ourselves that we have produced men and women, eminent in thought and action, but the great mass of people, those whom we hoped to give such an education as would fit them for citizenship and the blessings of a free government have fallen far short of our expectations.

We ask why this is so. Can we not find answer in the thought that our education has been superficial, that we have not laid a good, strong foundation; that while giving a smattering of languages, science and history, we have taught nothing thoroughly; that we expect our boys and girls to enter into productive lines of labor, in too early youth? Is not this especially true of our girls? We expect them to marry young and we feel they ought to earn a little pin money by teaching or otherwise. They leave school when they most need its training, they have broken away from home restraints, they have progressed just far enough to question everything, their early faith is shattered, and they have not the knowledge, hence lack the courage, to pursue their questionings to a legitimate end, their state of mind is destructive rather than constructive; to be original or "smart" is the hall-mark of wisdom. These immature young people, who ought themselves to be under intellectual discipline, go out to teach our schools, found our homes and help shape the destiny of our nation. Having no very clear ideas, only crude notions, how can we expect them to inspire our little ones,



and give them confidence in, and respect for learning? How can they teach them reverence, that attribute of the most truly educated? How can they impress upon them that law, absolute, unalterable, underlies all nature? How can they lead them through the darkness of doubt, to the light of satisfied answer, so that they can say, "Im, I doubt no more"? This higher life is possible to all, varying only as the individual varies, and we fall short of the highest enjoyment if we do not attain it.

This superficial view of education is not confined to the girls by any means, but experience shows that the great majority of our girls become either teachers or mothers, and in either place have to deal largely with the child's mind. It would seem, therefore, that if any should receive a broad, liberal education, it should be our girls. And that education should not stop until the mental and spiritual faculties and the will are trained and developed into a symmetrical whole.

At the risk of being called a shade of the eighteenth century, I would urge that a great deal of attention be given to what are called the humanities, as language, rhetoric, poetry; our ideal has been an utilitarian one. Knowledge has been regarded from a commercial point of view, what it would bring "on 'change"; the true ideal should seek to develop the humanizing faculties as well as those directly concerned in getting on in the world. I believe if this were done, souls of as lofty port as the old-time heroes would result. Such studies kindle kindly feelings, enlarge human sympathies, and help us to apply our benevolences wisely and well. There would be less need of charitable institutions, for man would realize more fully the worth of individual man. The spirit of oppression would be modified as the brute instincts were diminished. Would a truly educated man or woman lay claim to a monopoly of light and heat, food and drink? These are essential to human life and happiness. Would any broad-minded, liberally-educated person presume to deprive others of their heaven-given rights? The idea would be blasphemous.

I believe if due regard is paid to these matters in the present, that the next generation will know better how to solve the problems that we will bequeath to them. Muscles unused become weak and feeble, and cripple the usefulness of the whole body, fields uncared for are infested with briars and noxious weeds, functions of the intellect unused deplete the strength of the whole, and give room for vicious seeds to grow. It is in these undeveloped fields of our minds that the ills of which we complain have birth. When we are filled with the true conception of the worth of an individual, then will we seek to develop the highest type of manhood and womanhood. Emerson says, "Man should treat man as sovereign state treats sovereign state." This lofty conception has been revealed in various times in various ways. Poets, seers, prophets, philosophers, to each has it been revealed and it has been preserved for us to use if we will. What, of the highest and noblest of any age, was implicit, has been made explicit by these chosen ones. Inspiration did not end with the first third of the first century. It was in its infancy then. For ages men have heard the voice of God speaking within them; when that voice became transcendent, when it overwhelmed them, they revealed it to humanity.

I would that our girls be placed in the channel of this inspiration, that they, too, may learn to spiritually discern truth. This power does not come at a single moment but is a growth. First one fact loses its dry, hard coverings and is revealed in its spiritual light, then another and another, till the whole universe stands revealed as a grand spiritual truth. The moral and spiritual progress of a nation is gauged by the ability of its citizens to grasp the meanings of the common, everyday experiences of life. It then becomes the duty of every patriot, and it should be his pleasure, to place within everyone's reach the means for attaining this spiritual culture. Dr. Sherman aptly remarks, "It is not the

purpose of the public schools to raise up Miltons or Macauleys, but to enable all to hold communion with such great minds, if they will. Hence we feel it is little short of an imperative duty, for the sake of the general good, to enable every soul, according to its capacity, to find the inspiration there may be in any and everything that possesses spiritual quality." To prepare the coming generation for the attainment of the highest ideal, it is necessary, then, that to every girl shall be given the opportunity of grasping the deepest truths. In the final essence, the matter of education of our girls is not a matter of sentiment, but of utility, of business, if you will. It is an education for citizenship, not in the narrow sense of voting and holding office, but in the more comprehensive sense, that of the highest, most universal good.

There is a comparatively new line of study opened up to woman, giving her training in the work for which she is especially adapted. Rather, our advanced knowledge of science shows its adaptability to the most practical living. I refer to domestic science. We are beginning to learn that right living, that is, scientific living, is the basis of the home life and conditions one's success in his dealings with his fellowmen. Mrs. Helen Campbell says, "The statics and dynamics of household economy are to the household organism precisely what anatomy and physiology are to the physical organism. In the individual, in the household, in the state, is organic life; and until that organic life is understood, — its essential structure and function, — we cannot know how to maintain its health or promote its development."

Upon a correct understanding of the laws that underlie life depends the happiness and health of the home. The science of cooking, sanitation, ventilation, the building and lighting of the house, its furnishings, are essential to the highest development. Such knowledge also contributes to the economical management of household affairs.

As most women become home-makers, how essential it is that they have a proper knowledge of the laws and forces which science has discovered. Not only is it in the home that such knowledge is of worth, but also in our philanthropic work. Sociologists tell us of the ignorance of nutrition of the poorer classes and declare that the plan of aid should include an opportunity for the women to study the laws of the preparation and nutritive value of foods.

Our State University offers a splendid course in this line of work, and I heartily urge that every girl avail herself of its advantages. Of what value is her culture, her historical lore, her scientific study, if it does not enable her to regulate her home wisely? I would not have her neglect the cultural studies, they are essential to a symmetrical development, but I would urge her to add to these cultural studies that which will fit her for the highest type of work, the preservation of human life.

Of course with all this is a proper observance of what are called nature studies, I do not think anyone can attain to the height of culture until she can read some of the significant lessons of nature, until she can see beauty, science and art all about her. Tennyson beautifully expresses the thought I wish to convey.

"Flower in the crannied wall  
I pluck you out of the crannies;  
Hold you here, root and all, in my hand,  
Little flower, but if I could understand  
What you are, root and all, and all in all,  
I should know what God and man is."

All this study should be systematic, persistent. Indeed, one of the chief lessons that our colleges should teach is definiteness of purpose. There are so

many intelligent people, capable of making a success of life, and of conferring a blessing on humanity, who have not the will power to overcome the obstacles that naturally arise. They skulk and dodge, and in the end get more blows than those who bravely struggle onward, meeting and overcoming the impediments as they come. We do not need the woman who floats with the tide, she is not a pleasant companion, she is not a good example, she does not comfort and inspire us. We want women like the Cary sisters, Louisa M. Alcott, and many others, who have breasted the tide, baffled its waves and become a blessing to humanity. We want women capable of choosing between right and wrong, and of maintaining their position.

With a ripe intelligence, a well trained will, the girl will be ready to enter into some line of productive labor. It is absolutely essential that work of some kind be done, inactivity is decay, and decay death. Machinery is rapidly supplanting hand labor and, freed from the drudgery, we yet have a far more serious matter to meet in our leisure. Few are the people who can rightly employ leisure hours.

Our girls must be taught that it is essential to the highest life and the perpetuation of a strong, virile race, that they enter into productive lines of labor. If we take from them manual drudgery we must supply a capacity for other drudgery in other lines of work. The field is boundless. Art and science and its applications, literature, philanthropy, invention, are yet in their infancy. Valorous deeds are being done that must be fittingly sung. Our increased culture opens up other fields of usefulness, it needs only the perceiving eye to see, the will and strength to do.

The education of the child will fall more and more to the mother, as she develops an aptitude and fitness for the work. There is a growing tendency on the part of educators to give more attention to the individual child, but the obstacles are great; in the city there is the crowded class room, in the country the more discouraging feature of the multiplicity of classes. It is in the home that the foundation of character is laid. It is there that should be taught lessons of observation, manners, chivalry, unselfishness, truth, honor, industry and integrity. The educated mother will lay a broad foundation upon which the schools can build a strong superstructure that will stand square to the world. All the erudition and polish the schools can impart, if not founded on a healthy moral and spiritual conscience, are of no avail. Better for the individual, better for the state that he should have remained in intellectual darkness, than that the evil tendencies of the mind should be augmented. Experience shows that it is in the home that character is formed, and that it is the mother that shapes the destiny of the child. "Give me the first seven years of a child's life and I care not what you do with him afterwards," said a wise man long ago. It is the mother who has the character to mould in these early years. How essential, then, that her ideals are lofty, her sentiments noble, her knowledge comprehensive.

The whole matter of education of our girls is so complex, of so much importance, that we do not wonder a father exclaimed:

"I wonder any man alive  
Should ever rear a daughter."

It will cost something to give our girls the kind of an education needed, but the end will fully justify the means. When we see that educated, cultured women are realizing more than ever before, and in a higher sense, that in the home woman finds her truest sphere, it will be seen that it is all essential that she be fitted for the high duties devolving upon her. The home has achieved a new significance in our new light. It is not a place of manual drudgery simply,

but a forum for exercising the highest functions of life. Let us, then, give our girls at least equal opportunities with our boys. When we decide to send the boy to school, let the girl go also. It will pay from whatever standpoint we look, moral, spiritual, or economic.

President Scott: We will now devote a few minutes to the discussion of the papers that you have listened to this afternoon. The subjects are so nearly allied that we will not discuss them separately. I hope you will avail yourselves quickly of the opportunity.

Professor W. R. Lazenby, of the Ohio State University, Columbus: Just one thought occurs to me now and it is this, that we never tire of hearing of the large percentage of successful men who have left the farm. Various figures are given, sometimes one-fifth and even higher proportions, of the successful men in our towns and cities who were reared upon the farm; our friend, Mr. McLaughlin, referred to this. Now, at the same time we hear a great deal about the farmer's home not being what it should be. It seems to me we perhaps say a little too much on that side of the question. If we are getting the fairest test of a home, it seems to me the best test is after all the results attained; it is in the character of those who are brought up under its influence and if we have such good results from the farm home, the average farm home, as it is and as it has been, I do not know whether we ought to be in such undue haste to change the home very much upon the farm. It is true there are certain disadvantages, possibly, but then if we are getting so much better results than they are from the city homes, I do not know whether we want to imitate those homes, and that seems to be too often the trend, that we are not having all the conveniences and all the luxuries that our city cousins enjoy. The thought is, do we need them all?

Dr. W. I. Chamberlain, Summit County: I have often and often heard the statement made that a larger proportion of the farmers' wives were in the Insane Asylums than of any other class of people. I tell you there are more of them there because there are more of them in the world. One-half of the population, almost, are farmers, and one-half of the wives are farmers' wives, and of course there is a greater proportion of them. Like the old question, "Why do the white sheep have more wool than the black sheep? Because there are more of them." It is not true that a larger proportion of the farmers' wives are insane than of other classes. Insanity is largely the result of crime, dissipation and wrong living, and there is less of crime and less of intemperance and less of wrong living on the farm than anywhere else, and you cannot tell me in the same breath that ninety per cent. of the boys come from the farm and that a larger percentage of those boys' mothers is insane than of any other class of people. It always makes me indignant when I hear the statement that a larger proportion of our farmers' wives are insane than any other class, because it is not true. There are more of them in the

asylum because there are more of them in the world, thank God. (Applause.)

Mr. Alfred Shirer, Montgomery County: In respect to the coming century, we should bear one thing in mind. We are not the makers of our own destinies. Whether we believe in original sin or not we cannot go away from the fact that we have to harvest what our fathers and our forefathers sowed, and we are now sowing the seed for the coming generation to garner; therefore the destiny of the coming century is already partly made. We cannot get rid of it, for we have to harvest what has been sowed. That ought to stir us up, then, to sow seed for the coming generation to garner. I do not believe that we can shape the coming century just any way we want it. It is impossible; when the seed is planted it has to be harvested, and we have to harvest whatever is sown; so let us not expect too much of the coming century, or at least the first half of it. Probably the latter half, if we do our duty, may be a little better than the first half.

Mr. Jonathan Hay: This is a subject in which I am very much interested. While this discussion has been going on the thought occurred to my mind whether we have too many luxuries in our homes and too many conveniences, and whether the custom of fitting up the home with all conceivable luxuries and conveniences did not tend to over-rear the children of the household. I have seen instances where I thought the farmers gave their children a little too much rope, and those boys are not growing up to make the successful business men that the boys did who were reared upon the farm in the absence of some of these luxuries and conveniences. You can recall the history of some of our great men and you will remember that they had great trials and tribulations in their boyhood days and their homes were not palaces by any means, and I think that where there is an effort on the part of the young men and the young women to assist their parents in laying the foundation for a substantial country life, that we may expect more from these young men and young women than from the children of parents who live in luxury. I believe that our farmers' homes, taken on the average, are pretty good places to bring up boys, but I think sometimes we go a little too far in the luxuries of those homes. I was very much interested in the address of the gentleman who spoke and he gave us a very good picture of what a home might be, but the thought has occurred to me that we might overdo it by too much luxury.

Mr. Rector, Pickaway county: I was very much interested in both of the addresses that we have heard this afternoon and I think that each presents much food for thought. I have some boys and one girl, and I think when people have children the first thing to do is to give them as good an education as they can. It is the main thing to do. It is something that they cannot lose, cannot waste, and cannot help but profit by. The next question is, where can we give them that education?

My oldest boy went away to school, to college, and I did the best I could for him. Then the other boys were coming on and we thought we would move to Circleville and give them the advantages of a high school education. I do not think it hurt my boys a bit, and I do not think it hurt my girl, to give each of them the advantages that they can secure in a city. We have advantages on the farm and we have advantages in the city, they are both good and homelike wherever you find them. The right kind of a life is a good life, and can be found either in the city or the country, and I believe in having luxuries in the home, if they are the right kind of luxuries, thus teaching the children to love the home, and to love the schools, and to love the church, and to love the Sabbath day, and to shun all the evil and sin that they can; and, if they are educated in that line, when they grow up, no matter whether it is in the country or whether it is in the city, they will make good citizens, and that is the aim of home life. (Applause.)

Mr. Wolf, Auglaize county: We have heard a great deal of education here today, but I have not seen it really portrayed as I would like to see it. I have not heard any one make any mention of the township high school, and that is what I want to have in every township of the state. (Applause.) Singularly enough, you will find in a great many localities opposition on the part of the farmers themselves to the establishment of the township high school. We have a township high school which is running now the third season and which is a success; it affords a place to educate our daughters and our boys right at home, where we can supervise them and watch over them, and where if we wish to have any of these luxuries we can designate how many they shall have, and what they shall be. The township high school is something that should be placed within the reach of all farmers. Possibly there may be some in the state who are not as well located as we are. In our county we have about four hundred and fifty miles of gravel pike (there are one hundred and seven miles of gravel pike in the township) so that it would be very easy to locate a township high school in most of the townships in our county. It is a grand success. Local taxation is the main protest raised against the township high school, but it is only a small amount. Since it has been established everything is beginning to run smoothly, and I would suggest to every man here to work as hard as possible for a township high school in each and every township in the State of Ohio. (Applause.)

Mr. Daniel Crumley, Fairfield county: I would consider a farmer at this stage of the progress of the world a very dull man who did not put into his house when he was building a new one all of the modern improvements. I built a new house a few years ago and I put in all the conveniences I possibly could put in, regardless of what they have in the city, and I do know that it has been a benefit to me and to my family to such an extent that I am not able to put any value on it, and I

would like to say to the farmers of this great state of Ohio that I think they should each exhibit the same disposition and give to their families the benefits of such conveniences and modern improvements as they can.

President Scott: Ladies and gentlemen, the time has arrived when we must proceed with the program. I know you are all deeply interested in each of the topics before you for discussion. We have had in our community the advantage of a township high school for twenty-five years, and I am satisfied that figures would in no way compute the value of that school to my township and adjoining townships, when we take into consideration the education that hundreds of students have received there who go out into the world and are doing for themselves. We have made other improvements in our homes and in fact we find ourselves completely identified and connected with the outside world. While we are not in town, we are practically so much so that we have the same conveniences that the city individual has, and at no greater expense.

We will now hear from the chairman of the Committee on Resolutions.

Mr. John Begg, chairman, then submitted the following:

#### REPORT OF COMMITTEE ON RESOLUTIONS.

Mr. President and Gentlemen: Your Committee on Resolutions has the honor to submit for your consideration the following report:

WHEREAS, Our State Legislature is now in session, and we believe it the duty of the citizens of Ohio to advise the members as to their wishes and needs regarding the enactment or repeal of such laws as will be beneficial or injurious to the various business interests of the state; therefore,

*Resolved*, First, That we herein express our dissatisfaction with the Dog Law, passed by our General Assembly in 1898, making dogs personal property and the killing of the same punishable by fine or imprisonment, and we hereby demand its unconditional repeal.

(Great applause).

Second. That we favor the employment of convict labor in the improvement of our public highways and our state public works, wherever practicable.

Third. That we congratulate our State Board of Agriculture upon the splendid success attending its work as shown in our annual State Fair and Farmers' Institutes, and that we favor such enactment by our General Assembly as will enable them to continue their work, and place our State Fair upon a self-sustaining basis.

Fourth. That we heartily endorse the efforts now being made to suppress by law the sale of cigarettes and cigarette material.

Fifth. That we ask for an increased appropriation to carry on the work of the Ohio Agricultural Experiment Station.

(Applause).

Sixth. That we are for an increased appropriation for the use of the Ohio Horticultural Society.

Seventh. That we favor legislation to hold in check the destructive spread of the San José scale.

Eighth. That we demand the enactment of a law making all wild game the property of the person on whose premises said game is found, subject to state laws.

Ninth. That we favor the enactment of a law prohibiting the killing of skunks and quail for a period of five years from January 1, 1900.

(Long continued applause).

Tenth. Whereas, during the past thirty years nearly five hundred thousand dollars have been expended in the geological survey of Ohio, chiefly in the interests of the mining and manufacturing interests, and almost none of it in the interests of agriculture; therefore, Resolved, That a very thorough surface survey should be made of the soil and immediate underlying rock formations, and all the various modifying influences that have made the various soils of the state what they are—rich, poor or medium, as the case may be, in each locality.

All of which is respectfully submitted by your committee.

JOHN BEGG,  
W. W. FARNSWORTH,  
R. H. WALLACE,  
*Committee.*

Mr. George E. Lawrence of Marion: Mr. President, I move that we receive and adopt the report of this committee as read.

Mr. Daniel Crumley, of Fairfield county: I second the motion.

Mr. D. E. Williams, of Licking county: Mr. President, it occurs to me that there might be one additional resolution inserted, something like this: That no step backward be taken by the legislature of Ohio in its support of the Ohio Agricultural and Mechanical College. I would suggest the insertion of that immediately after the clause: "Supporting the State Horticultural Society." "That no step backward be taken in its support of our State University." I am not connected with the University, but I have special reasons for making that request, on account of special knowledge that I have of an attempt being made, or contemplated at least, of reducing the State University from its present state of efficiency.

Mr. R. H. Wallace: Does anybody know that there is any thought of taking a backward step? If there is, we might act upon it.

Mr. D. E. Williams: I say that I make the request because of the special knowledge which I possess of a contemplated attempt to reduce the efficiency of that University.

President Scott: The Chair suggests, then, that that be inserted. There is no use in going through with a lot of red tape for the purpose of presenting it to the Institute, but the Chair suggests that it be inserted as a part of the original report of the committee, and then the Institute can vote upon the report as a whole.

Mr. R. H. Wallace: There is one matter about which no one has handed in a resolution, and consequently it slipped the recollection of the committee. There ought to be an appropriation to aid in the traveling libraries' system for the benefit of the farmers. It was suggested yesterday afternoon that such a resolution be submitted to the committee, but as no resolution to that effect was submitted, the committee overlooked it.



Mrs. Mary E. Lee, of New Plymouth, Ohio: Mr. President, I move that the report be amended and that this be inserted: "We heartily recommend an increased appropriation for the traveling libraries as asked for by the State Librarian."

Mr. Begg: The committee is willing to accept that as part of the report, if it meets with the approval of the Institute. With the report amended as has been suggested, the committee now submits it to your consideration.

Dr. W. I. Chamberlain: Some one asked what that increase is?

Mrs. Lee: The increase asked is from four thousand dollars, the present appropriation, to six thousand dollars, as requested.

President Scott: The Chair will treat that as an amendment to the report.

It was then moved and seconded that the report of the committee be amended as above indicated, by the insertion of the words: "We heartily recommend an increased appropriation for the traveling libraries, as asked for by the State Librarian."

President Scott: I would state for the information of the Institute that that is an increase of two thousand dollars over the appropriation made for the last year. Four thousand dollars has already been appropriated for that purpose in carrying on the expense of the traveling libraries, as spoken of yesterday and the object of this resolution is the recommendation of the additional appropriation to the amount of two thousand dollars, making the entire appropriation six thousand dollars.

Mr. F. A. Derthick, of Portage county: Mr. Chairman, I would like to see one part of this report amended. It seems to me that it is hurrying the matter unnecessarily to ask us to take down all of this report at one gulp, but I am not going to object. Still there is one matter to which I desire to call attention. By the report of your committee, you are proposing to make game the property of the owner of the real estate where it is found. I remember one such piece of legislation was proposed in Ohio —

President Scott: Mr. Derthick, when the Chair recognized you it thought you were going to talk upon the amendment. You are out of order at this time. We have not yet disposed of the amendment.

The motion to amend the report of the committee by inserting the words: "We heartily endorse an increased appropriation for the traveling libraries as asked for by the State Librarian" was then unanimously carried.

President Scott: Gentlemen, the original motion for the adoption of the report as amended is now before the house.

Mr. Derthick: I beg your pardon. I thought that was the motion that was before the house at the time I attempted to address the chair. The report of the committee, as it now stands before the house, recommends the enactment of a law making all wild game the property of the

person on whose premises said game is found. I have been present when arguments have been made on the floor of the House and in the Senate, upon that same subject, and I know it is a very serious question whether it can be put through. I have an amendment that I would like to submit, if it is in order, whether that resolution goes through or not; and that is, that it shall be considered a misdemeanor, punishable by a suitable fine, to hunt upon the premises of anybody without the written permission of the owner. That has been endorsed by the county institutes of the State and I would like to have the State Farmers' Institute go upon record asking that it be made a misdemeanor, punishable by a suitable fine, to hunt upon the premises of anybody without the written permission of the owner, and then it does not make any difference to whom the game belongs.

Mr. Hardridge: I would like to say one word. I own several farms and I have had notices put in the papers as well as placed upon the farms, that there was no hunting allowed on the premises. If I see a man going through my farm and ask him if he is hunting, he replies, "I am not hunting on your farm. I am just going across your farm to hunt on the farm of your neighbor back of you." I tell you it is a curse to any man to be subjected to the annoyances which the farmers are subjected to under the present law. Just to go a little farther, if you have a haystack or corn shock or a pile of rails in any of your fields this time of the year, after the law is out, everybody is hunting rabbits and digging and punching around over your place, especially if there is a little snow on the ground. The men doing this are generally irresponsible men who do not work when cold weather sets in, and while ostensibly hunting rabbits, if they scare up a bunch of partridges, they will shoot them down, and still, if you accuse them, they will say that they are simply hunting rabbits. I tell you, I want every man to own his own game and I do not believe that outside of a limited term of days any man ought to be allowed on another man's land. If we have game laws for the hunting of game, let us have a certain time, if it is possible, for that hunting to be done, and don't allow anybody to hunt, only yourself, on your own land, either rabbits or anything else. And about dogs, I have had thirty or forty sheep killed this summer by a worthless breed of dogs owned by irresponsible men. I cannot get anything out of the men and I dare not kill their dogs, and I can get nothing from the State for the simple reason that I know the owners of the dogs, and I have got to sue them, although I may be unable to get anything from them. If I had killed the dogs, they would probably claim that they were worth one hundred dollars, and I would have had to pay for the dogs. The way the law is now, I dare not do anything.

President Scott: If I remember right, there is no second to the amendment offered by Mr. Derthick.

Mr. Derthick: I am not striking out anything in the original resolu-

tion, but I am simply adding to the resolution as it originally stood, the words making it a misdemeanor punishable by suitable fine to hunt upon the premises of another without the written permission of the owner.

President Scott: We must have a second to this amendment before it can be discussed.

Mrs. Lee: For the purpose of bringing the amendment before the house, I will second Mr. Derthick's motion to amend.

Mr. Byron Lutz, of Ross county: Mr. Chairman and gentlemen: If I understand the statutes of Ohio today, any man who steps upon your premises without your permission, is a trespasser and he is liable to prosecution by law; that is the statute of Ohio today and it has been the law of Ohio for years. I have had a little experience with the General Assembly. We tried two years ago, and four years ago, to protect the game of Ohio; we tried to make the killing of birds a punishable offense and attempted to prohibit the killing of birds for a certain number of years, but the sportsmen and the lawyers in the Legislature had the advantage of us all the way through. I voted in the last General Assembly against the dog law and I voted to protect the rabbits and other game of the State and to prevent these fellows in the city running around our farms killing our rabbits and game, but we could not do it. With reference to making game the property of the farmer upon whose farm it is found, as I understand the constitution and the decisions of our courts, it is impossible to do it. It is your game today, if you will protect it. The only thing for the farmer to do is to stand up and say to these fellows: "Get out, or I will prosecute you to the full extent of the law. These premises are mine; they are guaranteed to me as my property and I propose to protect them." — And that you have a perfect right to do under the laws of Ohio. (Applause).

Mr. A. Shirer, Montgomery county: I do not quite agree with the gentleman in all that he has said, but there is one point in the report of the committee which I think should not be lost sight of. Our skunks and quail are public benefactors and, because they are public benefactors, we can ask that they be protected and nobody allowed to kill them.

Mr. Lutz: I think that is right, and if you have a resolution demanding the enactment of a law stopping the killing of this game for all time, I will support it.

Mr. Begg: Gentlemen, it does seem to me that it is a peculiar state of affairs in the great state of Ohio, with all the wisdom we possess and all our boasted intelligence, that we can not formulate some provision by which we can protect our interests on the farm, in fact, as well as in name. We talk about suing for trespass, but that is simply a myth. (Applause). I will tell you what they will do; I am going to speak from practical experience. The law is so framed today that while my boys are husking corn in the field the fellows of the neighborhood, and around these little towns, who seldom turn a hand to honest labor, are

trespassing upon my farm and upon the premises of my neighbor and if I come and protest against it and speak in the most gentlemanly terms to them, they will jump over the fence and start their dogs up the line fence on my premises and they will stay on the other side. If I should shoot the dogs I would lay myself liable to fine and imprisonment, or else to have personal injuries done to myself on my premises by that class of people. That may be a little severe, gentlemen, but I want to tell you that you have a law to protect this innocent game over here in the State House yard, and if you can do that, you ought to be able to have a law enacted to protect the innocent game on your own land in your own county and in every county in the state. (Applause). There is no use for any intelligent citizen, whether he is a member of the Legislature or a day laborer, to come and tell me that the combined wisdom of the Legislature of Ohio, with the power that it possesses, cannot formulate a law which would remedy the present difficulty.

Mr. W. F. Barr of Franklin County: I was going to say, Mr. President, about what the last speaker has said. There is, however, one other point and that is this, they are so frank in their efforts to carry out their own will that they will throw other questions aside and walk over your farm with half a dozen dogs and drive all the quail and rabbits and other game on to another man's property where they can hunt, and then they will go over there and shoot the game. Under the law of Ohio, you cannot protect game on your own farm. They will walk through your farm, innocent to all appearance, no guns in their hands, and they will say that they are not hunting, and drive the game off your farm onto somebody's land where they can hunt.

Mr. Bryan: I apprehend there is plenty of law to protect the farmers in the emergency. I do not protect my farm, practically, from hunters and I do it by vigilance. The greatest obstacle in doing it is in not knowing who the hunters are. Suppose you see two or three fellows on your farm and you go to them. They perhaps know that the object is, if possible, to identify them. That is the main difficulty, I find, but if you are severely vigilant and watch your farms and tell people they must keep off, and have your farm properly posted, I find that practically my farm is immune from that sort of depredation. I am from Greene county, where the hunters are pretty well civilized.

Mr. Rector: Just one word about these dogs. I believe it would be a good thing for the farmers of Ohio if the bird-dog were made extinct. I will tell you why. He does not confine his depredations to the time when he is crossing your farm with the man who has the gun, but all summer long the bird-dog pursues the quail and other birds, disturbing their nests and disturbing the birds in the nest, and I think he ought to be annihilated.

President Scott: The question has been called for on this amendment. You are not discussing the main resolution at all. The amend-

ment before the house is to make it a misdemeanor punishable by suitable fine to hunt upon the premises of another at any time in the year without the written permission of the owner.

Mr. Derthick: In explaining that amendment I desire to say that it does not strike out anything which appears in the original report of the committee, but it is merely added to the resolution which appears in that report.

The motion was then carried.

President Scott: The original motion for the adoption of the report of the committee on resolutions as amended is now before the house. You have all heard the resolution as reported by the committee and you have also heard the amendments which have been made to it.

The original report of the committee as amended was then unanimously adopted.

Mr. Begg: Mr. President, there was a resolution submitted to your committee that we did not feel like recommending, but we do feel, in justice to the author, that we should report it to this meeting for such action as it desires regarding it.

The resolution is as follows:

Whereas, the executive department of our government has lately concluded a reciprocity treaty under a provision of the Dingley bill, by which a twenty per cent. reduction may be made in tariff rates on wools, hides, sugar, tobacco, etc., in return for like concessions on the exported machinery of this country; therefore, resolved, by the State Farmers' Institute, that we earnestly protest against the ratification of said treaty by the United States senate, and we ask our senators from Ohio to interest themselves and take active steps to prevent its ratification, and that a certified copy of this preamble and resolution, signed by the President and Secretary of this Institute, be forwarded to both Senators."

Mr. R. H. Wallace: While I would like to protect the wool of Ohio, I do not think that the Institute dare fly in the face of the existing laws of the United States on the question of reciprocity, or what is known as the Dingley Bill. While it might benefit the wool grower and I do not question it would, yet it strikes at the root of our prosperity in foreign commerce. They make like concessions, and these concessions have been agreed upon, and I certainly have faith enough in our executive department and in the Senate of the United States, which must endorse and ratify that treaty, to believe that they will get dollar for dollar, and a little more than that in the concessions received by this reciprocity treaty. This kind of a resolution passed by us would place this Institute and practically the state of Ohio in opposition to reciprocity, which we must have if we are to succeed in our business in the future. Now understand, we are not standing in opposition to the wool growers' interests, but we are here to say that reciprocity means the future success of our farming operations, for, unless we can find a foreign

market for our farm produce and manufactured products we will pretty soon have to draw in our horns, and I am sure that we are not ready to flood the country with no foreign outlet for our products and to feel that we must now cease manufacturing because we are over-producing and, while I sympathize with the wool-growers and wish we could do something for them, yet I do not feel that we ought to take a ground like this. The Dingley Bill has brought much of the prosperity, we believe, of the present times and I am simply offering this as an explanation why the committee did not offer this resolution in its report. The members of the committee do not feel that it is the proper thing to do and yet we did not feel, the matter having been discussed this forenoon, that the resolution should be turned down without giving the Institute an opportunity to act upon it.

Dr. W. I. Chamberlain: Mr. President, I move the adoption of that resolution.

Mr. Barr, of Franklin county: I second the motion.

Dr. Chamberlain: It is exceedingly unfortunate that the wool growers of Ohio are all away from this hall at this moment holding their own meeting in the state house, and that there is nobody to speak for them here. This feature of the treaty is wrong. I do not mean the feature of reciprocity. By opposing this feature, which reduces the tariff on wool contrary to the universal voice of the American people, we do not attack the whole Dingley Bill or the idea of reciprocity, which is a blessed one, but we do say that you should not trade off ten million farmers for ten millionaire manufacturers of iron, and that is all there is of it. (Applause.)

It does not oppose the administration. It simply requests our senators not to vote for this feature of the bill, and if they vote this down, they can bring in a new bill which does not sacrifice ten million farmers to a few millionaires engaged in the lumber business, and in the steel, iron and structural iron business; that is all there is of it, gentlemen. (Applause). The Agricultural Press is opposed to this feature of the treaty. The farmers are opposed to it and the petitions against this are pouring in and there is no earthly reason why this State Farmers' Institute should not resolve on this subject, as well as any other relating so vitally to our welfare.

Mr. Wallace: The resolution unfortunately does not state that fact, if it had we probably would have offered it, but it opposes the entire reciprocity agreement — I mean the entire agreement between the two governments — and that involves a great many things. If you instruct them to oppose entering wool on that list, then I am with you, but I am not ready to vote today and I do not think that this Institute, comprised as it is of intelligent farmers, is willing to vote for the resolution as it is worded. I am ready to vote for the wool grower, but not for a resolution condemning the reciprocity treaty.

Dr. Chamberlain: This resolution reads very distinctly: "Whereas, the executive department of our government has lately concluded a reciprocity treaty under a provision of the Dingley Bill, by which a twenty per cent. reduction may be made in tariff rates on wools, hides, sugar, tobacco, etc., in return for like concessions on the exported machinery of this country." That is exceedingly specific and I am very willing, although I did not offer the resolution and although I am not a wool man, yet for defense of the wool industry I am very willing to have added the words "Unless wools, hides and other agricultural products be excluded and not sacrificed."

Mr. Begg: I move the adoption of the resolution, then, as you amend it.

Dr. Chamberlain: If the committee does not object, then, I will add the words "unless wools, hides, etc., be not sacrificed."

Mr. Wallace: I want to know what "etc." means?

Dr. Chamberlain: The other things named above, towit, sugar and tobacco.

Mr. Wallace: If it is confined to wool alone, I am ready to vote for the resolution; otherwise, not.

Dr. Chamberlain: I do not know whether, in behalf of the wool man, to accept that alone or not. Still I would rather do it than to see the whole thing lost. Suppose we put in "wool and hides?"

Mr. Wallace: Well, we will let it go at that then.

Dr. Chamberlain: Then it would read "unless wool and hides be not sacrificed."

Mr. Tussing, of Franklin county: Mr. President, I would like to hear that resolution read as it has been amended, before we vote upon it.

President Scott: The resolution now reads:

WHEREAS, The executive department of our government has lately concluded a reciprocity treaty under a provision of the Dingley Bill, by which a twenty per cent. reduction may be made in tariff rates on wools, hides, sugar, tobacco, etc., in return for like concessions on the exported machinery of this country; therefore,

*Resolved*, By this State Farmers' Institute, that we earnestly protest against the ratification of said treaty by the United States Senate unless wools and hides be not sacrificed, and ask our Senators from Ohio to interest themselves in taking active steps to prevent its ratification, and that a certified copy of this resolution and preamble, signed by the President and Secretary of this Institute, be forwarded to both senators.

Dr. Chamberlain who moved the adoption of the original resolution, and Mr. Barr who seconded his motion, then consented to the resolution as amended, by the insertion of the words "unless wools and hides be not sacrificed."

Mr. T. J. Miller, of Leipsic, Ohio: You have said that the wool men are not here to represent their side of the case, but you lose sight of the fact that a great number of the farmers of Ohio are tobacco growers.

Is it fair to take tobacco out of that list? I do not think it is. I do not think it is right. I am not here to plead their case, but I think if you take out one, you ought to take out the other.

Dr. Chamberlain: Suppose we take out wools, hides, sugar and tobacco, and stop right there.

Mr. Wallace: I am afraid if you exempt everything connected with the bill, we will simply be turned down, and have our pains for our trouble and that will be all there will be of it. I would rather confine it to wool, feeling that there was some hope of success, than to extend it knowing that it will meet with failure. If we place ourselves in opposition to the entire bill, they will ignore us entirely, and will conclude that we are a set of "hayseeds" out here in Ohio, and that will be the end of it. I think we would better have Brother Todd up here help us out.

Mr. McKelvey: While I personally favor the resolution as a whole, I think it would be wiser to refer the whole matter to the wool growers' convention, which is now in session, and let them act upon it. I believe that their voice will be potent and powerful. There is evidently a division of sentiment here and it may result unfavorably. But if the wool growers now in session act upon it, it will carry a force which we cannot hope to have by any action we may take here.

Dr. Chamberlain: Mr. President, in view of the present situation I move a reference of this resolution to the wool growers' association, now in session at the State House.

Mr. R. H. Wallace: I second the motion.

The motion to refer the above resolution to the wool growers of Ohio, now in session at the State House, was then unanimously carried and the Chair directed the Secretary to immediately forward a copy of said resolution to the Secretary of the Ohio Wool Growers' Association, together with the information that the resolution had been referred by this Institute to the Ohio Wool Growers, now in session.

President Scott: I now have the pleasure of introducing to you Mr. George E. Lawrence of Marion, Ohio, who will address you upon the subject: "Wheat."

Mr. George E. Lawrence, of Marion, Ohio, then delivered the following address on the subject:

#### WHEAT.

To succeed in raising a good crop of wheat, it is necessary that we have soil that is fertile, well drained and in good mechanical condition for the reception and germination of the seeds, and also for the growth and development of the future plant. As a preparation of the soil for a crop of wheat, in my opinion, there is nothing that equals the old-fashioned *summer fallow*; the early plowing of the ground, and the frequent cultivations or harrowings that follow, so firms and settles the ground, so fines and fits the surface of the soil and thereby conserves the moisture so necessary to plant growth, and, more than all that, so aids in changing the various elements in the soil into available plant food, and also



seems to put the soil into such a kindly receptive mood, or condition, by the rest thus given it, that we are not sure but we would do well to return to the first and basic law given for agriculture: "But in the seventh year shall be a Sabbath of rest unto the land; thou shalt neither sow thy field, nor prune thy vineyard." But if a crop is grown, as is usually done, we find that potatoes are the best crop to be followed by wheat, but this can only apply to a very limited area, and the next best crop to precede wheat, as we believe and practice, is corn; and in our county (Marion) we presume fully one-half or more of our wheat is sown on corn ground, as we find that it requires but little if any extra work or expense.

The corn is usually cut into shocks twelve hills square, and if proper care and cultivation has been given it, on our loose, black, rich, alluvial soil it is ready for the grain drill, but for heavy clay soils the cultivator or disc harrow should be freely used.

To prepare stubble ground on which oats or other grain has been grown requires more labor and expense, as also for sod ground, which should be plowed as soon as possible, and in dry seasons the plow should be followed by the harrow and roller, and the use of the harrow and roller should be continued every few days, until the soil is thoroughly fined and compacted, and in the right condition so that the seed will germinate and grow.

The time of sowing is a question that is now a very hard one to answer, as the past season has fully demonstrated the fact that no general known rule can be given that will apply to all cases, as the recent outbreak of the fly in almost all parts of the state proves conclusively that we have still many things to learn of its habits and modes of operation, but at the same time we desire to repeat the note of warning, given by our wide-awake and vigilant sentinels at our Experiment Station, in which they say that the conditions in respect to the weather during the past season have been unusual, which may account for the activity and late continued work of the fly, and if this be true—as is very probable—a very great delay in sowing next season when conditions may again be normal would prove to be, perhaps, equally disastrous.

#### FUTURE OF WHEAT.

And now let us for a few moments consider one phase of the wheat question which is, I believe, of greater moment to the farmers of Ohio, than any other one point of the whole question.

I refer to the *future of wheat*, as we deem this a matter of vital importance at the present time, as the growing of wheat is so interwoven into our system of rotation of crops, seeding, maintaining the fertility of our soils, etc., so that anything which would even *tend* to eliminate, or destroy, this very important part or portion of our farm products, is a matter we deem worthy of careful consideration, and one that demands wise and intelligent action.

We are aware that upon this subject there are various conjectures and a great diversity of opinions owing largely to the fact that we may view the subject from different standpoints and vantage grounds, and also from the constantly changing and shifting conditions which envelop and dominate it, as for instance, steam, steel, and electricity, as applied to the means of transportation and sources of information has so literally brought the ends of the earth together, that failure or success of a crop in one portion of the globe affect directly, favorably or otherwise, the markets of the world; and more than that, to be able to form an intelligent opinion upon the subject, one must not only consider the world's crop for one or two years, but also for a series of years, and with this end in view let us briefly consult Beerholm's London List, one of the highest and best authorities on such matters, which estimates the *world's wheat crop*, by

periods of five years each, and we find that the average of these periods are as follows: From

1872 to 1877.....	1,850,000,000 bushels.
1878 to 1882.....	1,995,000,000 "
1883 to 1887.....	2,160,000,000 "
1888 to 1892.....	2,283,000,000 "
1893 to 1897.....	2,441,000,000 "

From the first to the second period the gain in the average was approximately 8 per cent.

From the second to the third 8 per cent.

From third to fourth 6 per cent.

From fourth to fifth 7 per cent.

From this we find the gain for the past twenty-five years has been 1 1-8 per cent. per year.

The approximation for 1898 and 1899 implies a slight increase in excess of the average for five years previously, but against this is the smaller reserves with which the years began.

From these figures we note that the world's supply of wheat is barely keeping up the average increase. Now let us for a moment consider the question from a different standpoint, i. e. of the consuming nation.

Sir William Crookes in his presidential address to the British Association at Bristol; England, a few months ago, fears a general dearth of the world's supply of grain. He stated that the United Kingdom raised only 25 per cent. of her supply, and that the increase in consumption was two million bushels annually, and adds, "A permanently higher price for wheat is, I fear, a calamity that ere long must be faced."

His reasons for this view of the situation are in brief that, "Wheat is the most sustaining food grain for the great Caucasian race, which includes the peoples of Europe, the United States, British America, and the white inhabitants of the rest of the globe." Another important feature is, "Of late years the *individual consumption* of wheat has almost universally increased."

In Scandinavia it has risen 100 per cent. in twenty-five years; in Austro-Hungary 80 per cent; in France 20 per cent., and in Belgium it has increased 50 per cent.

In 1871 the bread eaters of the world numbered three hundred and seventy-one million; in 1881 the numbers rose to four hundred and sixteen million; in 1891, four hundred and seventy-two million, and at the present time they number five hundred and sixteen million.

In short, "the augmentation" of the world's bread-eating population in a geometrical ratio, is evidenced by the fact that the yearly aggregates grow progressively larger.

In the early seventies they rose four million three hundred thousand per annum, while in the eighties they increased by more than six million per annum, necessitating annual additions to the bread supply nearly one-half greater than sufficed twenty-five years ago.

"That scarcity and high prices have not prevailed in recent years is due to the fact that since 1889 we have had seven world crops of wheat and six of rye abundantly in excess of the average. These generous crops increased accumulations to such an extent as to obscure the fact that the harvests of 1896 and 1897 were each below current requirements."

From this Sir William concluded that reserves being practically exhausted, bread eaters must be fed from current harvests.

I have dwelt thus largely upon this address, because of the importance of

the subject and the marked attention it has attracted, not only because of the eminent ability of the speaker and the care and thought given the subject, but more especially on account of the new phase of the question, namely the rapid increase of the *bread eaters* of the Caucasian race, and also the marked increase of *individual consumption* as well.

On the other side of this question we learn that there are vast acreages of wheat lands lying undeveloped in Siberia, the Argentine Republic, in Australia, also in those almost boundless fertile lands of the Red river districts of the North, and also, the vast possibilities which are still only faintly shown forth of the priceless heritage, lying idle, locked up, and dormant for ages in the soil of our own matchless domain; the extent and value of which no man can estimate; these, all these, must be duly considered.

But, again, there is one other point in connection with this important subject which has only been noted quite recently, but which, if true, may prove to be of greater importance than any yet mentioned, and that is the marked favor and rapid increase of the products of American mills being taken by Japan.

Recent advices report that the mills which supply the demands of that nation are unable to *fill their orders*, and the latest news still are that China is taking friendly to the finest brands of American flour, and a trade is increasing with that old sphinx of the world the outcome of which no one can foretell.

Certainly if the yellow races of the world become bread eaters, the future of wheat for years to come is assured to the American farmer.

Be this as it may, I am certainly assured that with increase of civilization there will naturally be increase of luxuries, and as the trend of the times unmistakably proves that the great Anglo-Saxon race is to lead in the very forefront of the world's wondrous march upward and onward into a higher civilization, better living, improved manners and customs, surely then, the products of that race will inevitably follow in the wake of its banners, and of all its many rich and varied products, its grains, its stock, its fruits and flowers, none is more conducive to the prosperity of the nation, the welfare of mankind, and the happiness of the people, than that grandest product of the soil, the queen of cereals, good old wheat.

President Scott: Gentlemen, the discussion of this subject is now in your hands and I will ask you to be as prompt as you can.

Mr. Alfred Shirer, of Montgomery County: There is one point I want to have a little information on. If the Mongolian race is to be the future consumer of our wheat, it strikes me it must mean thirty-five cent wheat or thirty cent wheat, for how under the heavens can they pay more than twenty-five cents a bushel for wheat when they only get ten cents a day for labor.

President Scott: Is there anybody here who can answer that question? The discussion is in your hands. Please be prompt.

Mr. W. F. Barr, Franklin county: There is a query which confronts us farmers that does not only hang on the subject of wheat raising, but upon everything else. It is the farmer that would like to be benefitted by all the future outlook of the world. We are talking a great deal here today I think "through our hats". We are talking at least for somebody else's benefit all the time. Now the question I would like to have solved here is, how we may avail ourselves of this future outlook which presents so glorious a prospect, so that we may get our full share of the practical

benefit. We raise wheat and corn and hogs and cattle and when we come to market our produce we read in the market of Pittsburg that cattle are worth so much, but when we offer our stock for market, they say there never was such a falling off in prices in the history of the market as there is just at this time, and they can not give more than so and so; we cannot ship hogs or cattle to Pittsburg, but we are compelled to sell them to somebody else, who ships them for us and he is the man who is reaping all the benefit and the farmer takes exactly what he can get for them. Now, while the future looks glorious and while some of the interests in this country looks forward to the twentieth century as the brightest era in the world's history yet the question that confronts us farmers is, how are we to help ourselves? There are combinations all over this land which have us by the nape of the neck, and which are holding us down and think that we should be thankful if we are getting a living off of a farm, and that is about all they intend to give us. We can work, year in and year out and produce and reproduce, continually increasing our crops of cereals or of stock, and yet, when we come to sell the product of our farms we can only get the same old price. In other words, we haven't the chance of competition any more, competition with the farm is at an end, so far as individual farmers are concerned. If you are a manipulator and can manipulate the markets of Europe, as well as the markets of America, you may hope to make a fortune, but there is nothing of that kind left for the farmer. That is just the condition we are now in. I would like to have the gentlemen answer, how we can avail ourselves of all the advantages that seem to be presenting themselves in the glorious future of the twentieth century. I would like to live long enough to see them.

Mr. Rector, of Pickaway county: There is nothing in the world prohibiting any farmer from shipping his cattle or his hogs or his sheep to East Liberty or to Chicago at the same rates as that obtained by any other man who follows the business. He gets the same rates from the commission men and the same terms in selling. I do not believe the farmers' outlook is so gloomy. I think it looks pretty bright when you compare the times now with what they were four or five years ago. I think they are a great deal better and a great deal brighter. It is true, we do not get so very big prices for corn—twenty-eight or thirty cents a bushel—when we haul it to market, and wheat sixty-four or sixty-five cents a bushel. It is not enough, we think, but we must remember that we can raise this corn and raise this wheat with improved machinery, and with a little more than one-half the expense at which our fathers raised it. We must avail ourselves of all our advantages. The farmer that raises his corn and feeds the crop into hogs, sheep and cattle, has not seen such a time to make money for a long time. We can sell hogs at four dollars and four dollars and fifteen cents per hundred and that means forty-five cents a bushel for the corn that they consumed;

or we can feed our crop of corn into our cattle, which will bring us five and a half cents, and which makes forty or fifty cents for our corn. Sheep also are selling at a good price, so that I do not think we have so very much to complain of.

Dr. W. I. Chamberlain, Summit county: I think this has been an exceedingly thoughtful paper, and a very instructive presentation of the subject. I have attempted to report the substance in long-hand of a great many papers, but it has seldom been my privilege to listen to a paper containing more solid substance than the paper just read. I think it is worthy of our thoughtful consideration. It does seem to me that Mr. Rector has hit the point and the only way for the individual farmer is to become the shipper of his own stock. If we will raise enough good steers and ship them and see to our shipping ourselves, and continue in the business so that the dealers in such commodities in the larger centers know us and the commission men know us, and know the kind of product which we handle by the car load, we will get as good prices as anybody else and retain for ourselves the profits of the middle man. I can ship a car load of potatoes into Cleveland and get just as good a price as anybody else. The point, it seems to me, is that the individual farmer should grow enough of one, two, three or four products so that he can ship to the final consumer and keep from paying profits to this dreadful middle man and the men at both ends of the line, too.

Mr. Sidell of Wayne county: The man who is dissatisfied with the profits of the middle man or the live stock dealer, as we will call him, ought certainly to undertake to do his own shipping for a while. I do not know how it is in the different localities in which you live, but in Wayne county, which I sometimes jokingly call the poorest county in the state, I do not know of any stock dealers who have become millionaires. If those who are dissatisfied sometimes with the price that they receive at home would only follow their product into the market I think the next time they would be satisfied to sell at home. My friend over here certainly strikes the keynote for further success in farming, when he speaks of marketing our crops into our animals. That is where the future success of the farmer lies. As long as live stock is at its present prices, undoubtedly that is the way in which the farmer can dispose of the product of his farm. He should grow his corn and other crops and feed them into live stock and then he will be able to get good prices for his crop.

Mr. R. H. Wallace: I just want to add a word to what has been so well said by this gentleman. If we are to improve the soil of our farms so that in the next century they will be better than they are now, we should manufacture our farm products into good, fine pork and mutton and milk and wool, and sell it off the farm, and as one of the state lecturers said in my hearing recently—and I am not sure but he is right—by this method we can add from eight to ten per cent. to

the fertility of our farms every year for the next twenty-five years, and we will have very rich farms then.

Mr. H. P. Miller, Delaware county: I would like to add a word to what this gentleman has said with reference to the shipper. I have shipped to a considerable extent to Buffalo, Cleveland and other points, and after my experience in this line I say to you, as farmers, do not undertake it. It does not pay; I know it by experience. I ruined my health, and while I did not ruin my pocket-book altogether—I still have a little money—it proved to be a disastrous experiment. It does not pay the farmer to ship his own stock. If you can get fifty or sixty per cent. of the market price at home let it go, sell it at home, is my advice, and I will say in addition to what this gentleman has said, whether the price of cattle, hogs and sheep is high or low, you will find that high prices will follow low prices, and when they do come be prepared to take advantage of them. Do not sell regardless of the prices, but endeavor to take advantage of the best prices.

Mr. Fippin of Franklin county: The subject under discussion was wheat. It strikes me that the man who takes the larger proportion of the profit from the farmer is the miller. Between the producer of a crop of wheat and the consumer there is from one dollar and ten cents to one dollar and twenty cents for five bushels, or about what would make a barrel of flour, and that is too large a profit for the middle man.

Mr. Barr: I think most of you have misconceived what I was stating. I was not talking about the shipper who ships his stock to Pittsburgh or other localities. We are talking about wheat, and the difficulty is that the wheat of the individual farmer gets into these big granaries or repositories on the coast and other places, and is placed in these large repositories at no remunerative price to the producer. There is a class of people that become millionaires and are making their thousands out of the sweat of the individual farmer; they are the ones that are making the money. It is not the man that is shipping his stock to Pittsburgh, it is beyond that. Under the present situation we cannot help ourselves; our produce is going to Europe, it is going to China and all of these other places, including the Philippine Islands, and it looks as if there should be a fine outlook and a grand chance for us, but when we come to size up the situation at the end of the season we find that the profit has not gone into our pockets. How can we help ourselves as against these combinations who combine everything into their own pockets as against the farmer? That is what I am talking about. I have not heard a man speak with reference to this branch of the subject but what speaks dolefully of the outlook on account of the combinations that are sapping the vitals from everything produced by the farmer in their own interests as against the interest of the producer. I want to know how to get away from such difficulties.

Mr. Kinkaid, of Adams county: I have never known anybody to

get rich talking about millionaires or middle men. (Applause.) Eternal vigilance is the price of liberty in farming as in everything else. It is the man that gets up and gets that gets something. In our experience in Adams county and adjoining counties I have never known a stock dealer to die wealthy. Manchester, Adams county, is a great shipping point for a county of its size—thirty thousand population—and man after man has gone to the wall financially while engaged in that industry. The same is true of the grand old tobacco county of Brown; some of the best men in Brown county have broken up handling tobacco. Even since I can recollect I have heard men talking about the middle man; we have men in our township who neither vote nor go to church, but who are continually talking about the middle man. What we want to do is to work, get up early in the morning and use our brains and use our intelligence, examine the market reports, see who pays the most for wheat, corn, hogs, cattle and sheep, be shrewd and thrifty in prosecuting our business and there is no danger but what we will succeed. (Applause).

Mr. Begg: I am afraid we are getting off of the discussion of the subject at hand. The subject of the discussion is "wheat."

President Scott: I am glad that you have called our attention to it and I hope that we will stick to the subject.

Mr. Begg: Gentlemen, there is something certainly that can be said in advocacy of the wheat problem and there is one thing I am glad to see and that is the large number of representative farmers here today from all over the State of Ohio. Referring, however, to the subject under discussion I think we can advance our interests materially by improving the quality of wheat grown upon the farms of Ohio. We can grow a better grade of wheat by careful selection of seed, by grading the seeds carefully, by shocking it and harvesting our grain and getting it in out of the weather before it is bleached, and taking care of it so that we can present it to the miller or to the grain dealer in the best possible condition. I tell you the business men when they want to sell you goods present them in the best possible condition to attract the eye, so that you can see their best qualities. The main lesson to learn in wheat growing is to improve the quality of the crop. I am told by our elevator men at Columbus Grove that there is a decided improvement in this regard in that section of the state; they get less dirt with the wheat and a smaller amount of cheat is being grown because there is a smaller amount of it being sold. We do not think of sowing wheat any more unless it is first properly cleaned and it is having its effect in making a better grade of wheat and producing a larger amount per acre. These are the things we want to discuss and not get off on to live stock questions.

President Scott: You do not believe then that wheat turns to cheat?

Mr. Begg: You would not suppose that I do, would you?

President Scott: No.

Mr. Daniel Crumley, Fairfield County: A few words upon the sub-

ject of getting wheat in proper condition to sow. When I operated the home farm, where I was born and raised, the first thing I did was to buy myself as good a wheat grader as there was in the market in order to get my seed in proper shape to put into the ground. I think that was the best investment I made. The gentleman who has last spoken has, I think, stated the exact situation. He has covered all of the ground and I will not go over it again. Whenever the wheat buyers of Lancaster approach me to purchase wheat and the price does not suit me, I feed my wheat into hogs and I realize more profit in that way at present prices than to haul it to market at sixty or sixty-five cents per bushel.

Dr. Chamberlain: You are talking on live stock again. (Laughter.)

Mr. Killgore, of Madison county: About fifty per cent. of the wheat in our county that was sowed about the middle of September is practically dead while that which was sowed from the first to the tenth of October went into winter in good shape. What I would like to know is whether the late sown wheat will be attacked by the fly in the spring of the year.

Mr. R. H. Wallace: I can tell the gentleman next June.

Mr. T. C. Laylin, of Huron county: Let him examine the wheat and if he finds the fly in the root, it will be attacked in the spring.

Mr. Rector: Will not that depend upon whether we have a warm, early spring or not?

Mr. Laylin: If we have a warm, early spring, then this fly in the flax seed state will hatch out next spring, but if we have a late, cold spring, old farmers say it will not be so destructive. If the weather is warm at any time before the wheat is perfect the fly will hatch out and lay its eggs and the larva will get in its work and destroy the wheat by cutting it off at the root. There is only one remedy, if the parasites are of sufficient force to eat the eggs when they are laid, then we may look for some wheat on that ground but if it is badly infested now, you may look for very little wheat next year.

Mr. Kilgore: The wheat which was planted earlier in the season has been practically eaten up, leaving nothing except the bare ground, but that which was sown later is in good condition.

Mr. W. W. Farnsworth, of Lucas county: In regard to the question as to whether late sown wheat will be injured by the fly, I asked the same question of a friend who has had considerable experience in this line. I had one field in which I picked strawberries last spring, then planted it to potatoes and by that means it was plowed pretty late, in fact, I thought, almost too late to expect good results. It was sown about the 25th of October but the ground was in fine condition and the weather was favorable, and I secured a good stand. At present, it is the most promising wheat field in the neighborhood. I was anxious to know whether it would be attacked by the fly next spring. He said that it would not be; that the insect does not migrate very rapidly and that there would be little danger of injury. Before sitting down, however, I want



to express my surprise that Brother Begg does not believe that wheat will turn to cheat, for I must say that a farmer in our neighborhood a year ago last fall sowed twenty acres of wheat and also sowed some timothy seed with the wheat. The winter that followed was not a very good growing winter either, but still he claims that in the spring the wheat turned to chess, and then the chess turned into timothy, and he got a fine crop of timothy last year. (Laughter.)

Mr. Kilgore: Will the Hessian fly attack rye?

Mr. McCormick, of Gallia county: In answer to the gentleman's question, I will say that I have raised rye for a number of years and have sown it away beyond the period where we dare to sow wheat, but I have never in my experience found any rye attacked by the Hessian fly. I now have a field of rye growing, which is in excellent condition, and there is no appearance at all of the fly, but all the wheat sown in our vicinity during September is badly affected with it. I sowed no wheat until in October but in the forty-five acres which I have sown, I have found nothing to indicate, as yet, the presence of the fly.

President Scott: Gentlemen, if you have discussed this subject as far as you desire we will now close. Is there any other business that should be brought before this meeting at this time?

Mr. White: Mr. President, I move that the Secretary of the State Board of Agriculture be requested to have a copy of the resolutions which were passed by this Institute printed and distributed among our Senators and Representatives now in session, at as early a date as convenient.

This motion was then duly seconded and carried.

President Scott: If there is nothing further to be brought before the Institute I desire, at the conclusion of this meeting of the Ohio State Farmers' Institute, to say to you, ladies and gentlemen, who have favored us with your presence during the sessions of the Institute, that many gratifying things to your presiding officer have occurred during these meetings. I also desire to say that the interest manifested in this meeting and during each session of the Institute, has been most gratifying to the State Board of Agriculture and to the Secretary of the State Board. I have seldom been in a meeting where I have seen so many pleasant faces, so many intelligent faces, coming as they do from all parts of the great state of Ohio. I recognize many faces that I have met at the different Farmers' Institutes and I want to say to you that it has been a pleasure as your presiding officer to have the opportunity of taking you by the hand and of recognizing you upon the floor and of listening to the many interesting discussions and the fluent addresses which have been heard during each session of the Institute. Many instructive and interesting discussions have been brought up on important topics at each meeting of our Institute, and I shall look back with happy and fond memory upon the hours spent with you at this meeting. Praying that God's blessing may

rest upon you, I now announce the conclusion of the State Farmers Institute for the year 1900.

Mr. Cory: Before we adjourn, I desire to say that we have heard a great deal of talk about this grand country of ours, and especially the great state of Ohio, and I would therefore suggest that in adjourning this meeting, we sing, "My Country, 'Tis of Thee."

Mr. T. C. Laylin, Huron county: Before doing that I desire to make a motion that this Institute tender to our presiding officer a heart-felt vote of thanks for the able manner in which he has presided over our deliberations.

This motion was then duly seconded and unanimously carried, being put to the Institute by Mr. Laylin.

President Scott: I sincerely thank you for this expression of your regard.

After singing "My Country, 'Tis of Thee" in response to the suggestion of Mr. Cory, the State Farmers' Institute for the year 1900, was then declared adjourned *sine die*.

## LAW GOVERNING FARMERS' INSTITUTE SOCIETIES IN OHIO.

[PASSED APRIL 26, 1890, AND AMENDED APRIL 27, 1896.]

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, that when twenty or more persons, residents of any county in the state, organize themselves into a farmers' institute society, for the purpose of teaching better methods of farming, stock raising, fruit culture and all branches of business connected with the industry of agriculture, and adopt a constitution and by-laws agreeable to rules and regulations furnished by the state board of agriculture; and when such society shall have elected proper officers and performed such other acts as may be required by the rules of the state board of agriculture, such society shall be deemed a body corporate.

SECTION 2. Not to exceed four farmers' institute societies organized under the provisions of this act, shall hold annual meetings under the auspices of the state board of agriculture in any one county in the state, and the state board of agriculture shall have power to determine the number and name the times and places for holding such institute meetings.

SECTION 3. When a society organized under the provisions of this act shall have held an annual farmers' institute meeting in accordance with the rules of the state board of agriculture, the secretary of said board shall issue certificates, one to the president of the farmers' institute society and one to the president of the state board of agriculture, setting forth these facts and, on the presentation of these certificates to the county auditor, he shall each year draw orders on the treasurer of the county as follows: based on the last previous national census, a sum equal to three mills for each inhabitant of the county in favor of the president of the state board of agriculture, and a sum equal to three mills for each inhabitant of the county in favor of the president of the farmers' institute society, where but one society is organized, but in counties where there are more than one farmers' institute society organized under the provisions of this act, and holding meetings under the auspices and by direction of the state board of agriculture, the said three mills for each inhabitant shall be equally apportioned among such societies, and warrants in the proper amounts issued to the respective presidents, and the treasurer of the county shall pay the same from the county fund; provided that in no county shall the total annual sum exceed two hundred and fifty dollars;

and provided further, that the payment to any institute society shall not exceed the expense, as per detailed statement, provided in section four of this act.

SECTION 4. With each certificate of the secretary of the state board of agriculture to the county auditor, which certificate shall indicate the number of societies organized in the county and holding meetings by direction of the state board of agriculture, and before the auditor issues his order upon the treasurer, there shall be filed with the auditor a detailed statement of the expenses of the institute for the current year, no part of which shall be for salaries of officers of the institute society; but this provision shall not apply to the order in favor of the president of the state board of agriculture, which board shall issue statement as required in section six of this act.

SECTION 5. At the annual farmers' institute meetings, held under the provisions of this act and under the auspices of the state board of agriculture, the said board shall furnish lecturers or speakers whose compensation and expenses shall be paid by the board.

SECTION 6. At the close of each season's institute work, the state board of agriculture shall publish in pamphlet or book form, such lectures and papers delivered at the several institute meetings, as may seem of general interest and importance to the farmers, stock breeders and horticulturists of the state, copies of which shall be furnished the secretary of each institute society, and the balance issued to be for general distribution; the cost of preparing the matter and the distribution of the pamphlet or book to be paid by the state board of agriculture. Said board shall also publish, in such pamphlet or book, a detailed statement of its receipts under the provisions of this act and the disbursements on account of institute work.

SECTION 7. Said original act, entitled "An act to provide for the organization and support of farmers' institutes," passed April 26, 1890, is hereby repealed and this act shall take effect and be in force from and after its passage.

# RULES

OF THE

## OHIO STATE BOARD OF AGRICULTURE FOR THE ORGANIZATION AND MANAGEMENT OF FARMERS' INSTITUTE SOCIETIES, ADOPTED MAY 26, 1896.

SECTION 1. Parties who contemplate organizing Farmers' Institute Societies and Farmers' Institute Societies already organized desiring to hold meetings under the auspices of the State Board of Agriculture, in accordance with the act of the General Assembly of Ohio, passed April 26, 1890, and amended April 27, 1896, must first present a petition to the State Board of Agriculture for the same, signed by twenty or more residents of the county, without regard to sex, but all signers must be of legal age. In order that the Board may act intelligently on such petitions, the petitioners should furnish replies to questions propounded by the State Board of Agriculture concerning proposed place of meeting, capacity of hall or building to be occupied, railway facilities, etc. Blank petitions with the questions to be answered will be furnished on application, by the Secretary of the State Board of Agriculture, at Columbus.

SECTION 2. Said petitions should be filed with the Secretary of the State Board of Agriculture not later than the first day of September of any year. Earlier presentation will greatly facilitate the work of the Board in considering applications and assigning dates and speakers. Petitioners will be promptly notified of such action as the State Board of Agriculture may take.

SECTION 3. After the petition for the holding of an institute meeting shall have been granted, the petitioners will proceed to organize, if not already organized, by the election of a president, vice-president, secretary, treasurer and an executive committee of three (the president and secretary to be ex-officio members of this committee, making a committee of five), all to serve for the period of one year or until their successors are duly elected. After the first organization an election of officers shall be held during each annual institute meeting, only members of the society being entitled to vote. Of the officers, not more than two shall be elected who are residents of the same township. The society shall adopt a constitution and by-laws in harmony with the institute law of the State and these rules.

SECTION 4. As soon as an organization is completed it shall be reported to the Secretary of the State Board of Agriculture, with the name of the society, and the names and post office addresses of the officers and a copy of the constitution and by-laws.

SECTION 5. The secretary of each institute society shall keep in a substantial book or books a record of all meetings of the executive committee and society, and a roll of the members, with the post office address of each; first, the original petitioners for the organization, followed by residents of the county or locality, of legal age, who, by enrolling their names in the secretary's book, become members of the society.

SECTION 6. When a petition has been granted, and the society notified of the date assigned for its institute meeting and the lecturers to be furnished by the State Board of Agriculture, the executive committee shall proceed in due time to make arrangements for the institute meeting, by engaging hall, selecting the local talent desired, arranging for music and all other details necessary for the successful holding of a farmers' institute meeting, and preparing a program which shall occupy the time assigned for the meeting. In arranging the program, time shall be allowed for discussion of the topics presented and for miscellaneous questions. The speakers sent by the State Board of Agriculture are to occupy not more than half the time of the institute meeting, and local talent, discussions and music the remaining time. The program should be published for general distribution at least two weeks in advance of the institute meeting, and at the same time a copy mailed to the Secretary of the State Board of Agriculture and to each speaker who is to take part. Societies should thoroughly advertise and use diligence and enterprise to create an interest among the people and to secure the largest possible attendance. Every citizen of the county and locality ought to be informed as to the time, place and nature of the institute meeting. The executive committee shall have full authority to audit and settle all accounts made for and in behalf of the institute society.

SECTION 7. All institute societies organized under the institute law of the State shall be strictly non-partisan and non-sectarian in every phase of their work, and no institute shall be conducted in the interest of any party, sect or society, but for the equal good of all citizens and farming communities.

SECTION 8. The presiding officers of the various institute societies of the State, holding meetings under the auspices of the State Board of Agriculture, should always and under all circumstances prohibit discussions of subjects other than those pertaining to agriculture, horticulture, stock breeding, etc.; anything of a sectarian or partisan character should not be discussed or commented upon either by speakers or

members of institute societies ; no criticisms of state, county or township officials should be tolerated under any circumstances.

SECTION 9. No fee shall be charged for admission to institute meetings held under the auspices of the State Board of Agriculture ; they shall be public and free to all, the object being to impart agricultural knowledge and experience free to all persons sufficiently interested to attend. If any society desires to hold quarterly, monthly or weekly meetings during the year, the expense of the same may be met by admission fees, subscriptions, collections or sale of season tickets. Nothing in this section shall prevent voluntary contributions or subscriptions for securing speakers desired other than those sent by the State Board of Agriculture.

SECTION 10. Within ten days after the close of each institute meeting, the secretary shall make a report to the Secretary of the State Board of Agriculture, blanks for which will be furnished. On receipt of such report by the Secretary of the State Board of Agriculture he will issue the certificate, according to law, which will enable the society to draw the amount due from the county.

SECTION 11. A society or its executive committee may, on the call of the president, hold such business meetings as may be necessary to transact the business of the society and arrange for the annual institute meeting to be held under the auspices of the State Board of Agriculture ; and the traveling expenses of the executive committee for such meetings may be paid as other items and charged with other expenses of the institute.

SECTION 12. When the secretary of a farmers' institute society shall send a written report to the Secretary of the State Board of Agriculture, as provided by Section 10 of these rules, he shall state the cost of the institute meeting (not including expense of speakers sent by the State Board of Agriculture), number in attendance during the institute meeting, speakers who filled appointments, speakers absent, whether speakers were acceptable or otherwise, and report any feature or matter of special interest.

SECTION 13. The State Board of Agriculture requires that lecturers employed by the Board shall devote their time and efforts to the discussion of such subjects as are clearly provided for by the institute law of the State, namely, "Farming, stock raising, fruit culture and all branches of business connected with the industry of agriculture."

THIRTY-THIRD ANNUAL REPORT

OF THE

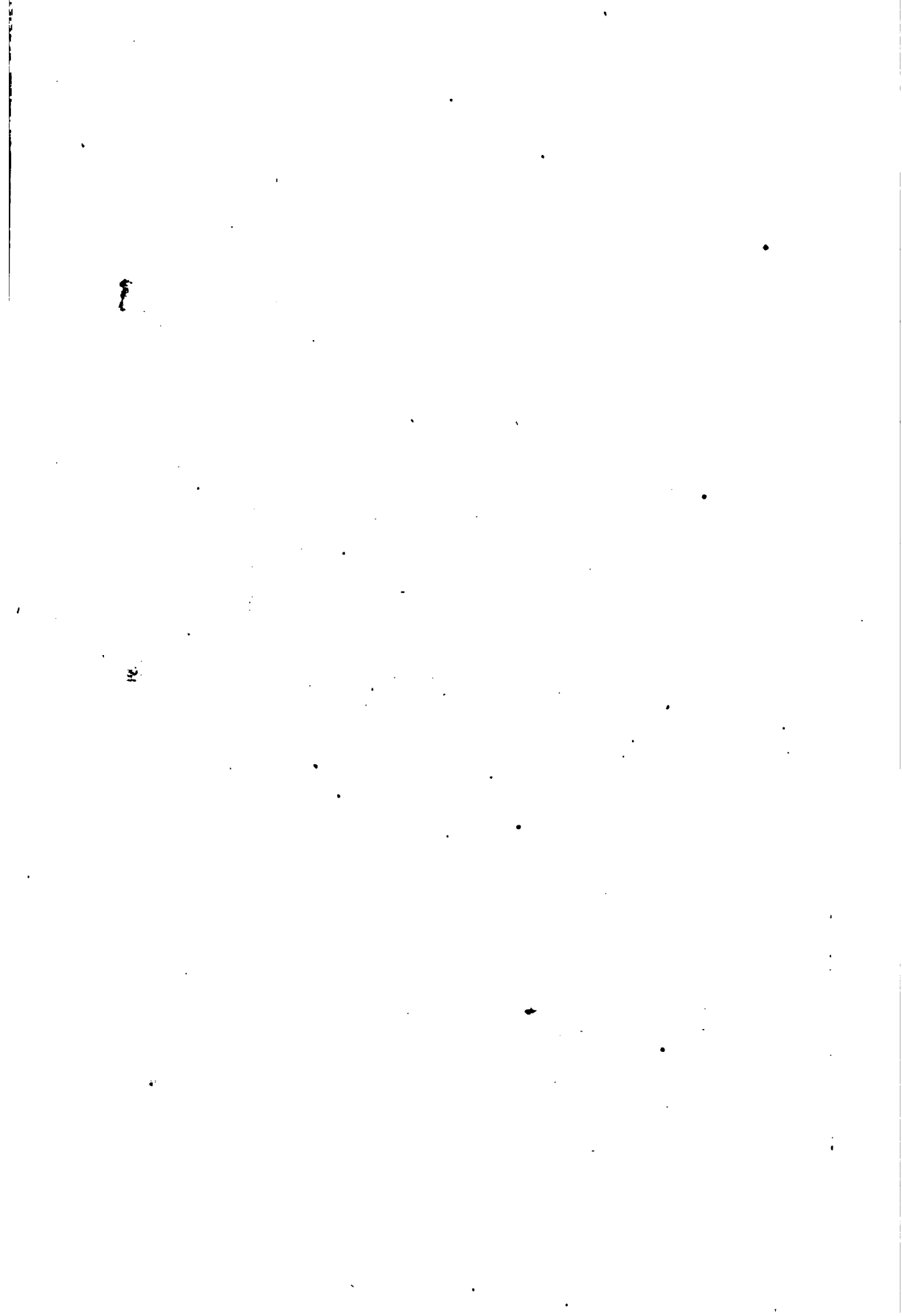
OHIO STATE  
HORTICULTURAL  
SOCIETY

FOR THE YEAR 1899.

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Organized in 1847 as Ohio Pomological Society.





# OHIO STATE HORTICULTURAL SOCIETY.

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## OFFICERS FOR 1900.

E. H. CUSHMAN, President.....Euclid, O.  
W. N. SCARFF, Vice President.....New Carlisle, O.  
W. W. FARNSWORTH, Secretary.....Waterville, O.  
N. OHMER, Treasurer.....Dayton, O.

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## EXECUTIVE COMMITTEE.

W. H. OWEN.....Catawba Island  
E. G. COX.....Bradrick  
R. J. TUSSING.....Canal Winchester  
Also President and Secretary.

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## LIBRARIAN.

W. J. GREEN.....Wooster

#### AD INTERIM COMMITTEE.

First District—W. G. FARNSWORTH.....	Waterville, Lucas County
Second District—N. H. ALBAUGH.....	Phoneton, Miami County
Third District—A. SHIRER.....	Dayton, Montgomery County
Fourth District—W. H. OWEN.....	Catawba Island, Ottawa County
Fifth District—R. J. TUSSING.....	Canal Winchester, Franklin County
Sixth District—E. G. COX.....	Bradrick, Lawrence County
Seventh District—F. E. CARR.....	Lakewood, Cuyahoga County
Eighth District—L. B. PIERCE.....	Tallmadge, Summit County
Ninth District—E. H. BRAWLEY.....	Amesville, Athens County
Tenth District—C. L. WHITNEY.....	Warren, Trumbull County

#### CENTENNIAL COMMITTEE.

W. W. FARNSWORTH.....	Waterville
WM. MILLER .....	Gypsum
N. OHMER .....	Dayton
J. J. HARRISON.....	Painesville
N. H. ALBAUGH.....	Phoneton

#### COMMITTEE ON ENTOMOLOGY.

F. M. WEBSTER.....	Wooster
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#### COMMITTEE ON VEGETABLE PATHOLOGY.

A. D. SELBY.....	Wooster
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#### COMMITTEE ON SAN JOSE SCALE LEGISLATION.

J. J. HARRISON.....	Painesville
W. H. OWEN.....	Catawba Island
E. M. WOODWARD.....	Kirtland
W. N. SCARFF.....	New Carlisle
W. W. FARNSWORTH.....	Waterville

# CONSTITUTION

OF THE

## OHIO STATE HORTICULTURAL SOCIETY.

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1st. The Society shall be known as the OHIO STATE HORTICULTURAL SOCIETY.

2d. Its object shall be to select and disseminate information relative to fruits and other horticultural products, and to promote the taste for horticultural and rural embellishments among the people.

3d. Its officers shall be a President, Vice President, Secretary and Treasurer, who shall, in addition to their official duties, constitute a board, empowered to fill all vacancies that may occur during the year by death or resignation. They shall be elected annually, by ballot, and hold their office until their successors are elected, but the Secretary shall not enter upon the duties of his office until the first day of August following his election.

4th. The President shall preside, and conduct all meetings of the Society, and in his absence the Vice President shall perform the same duties.

5th. The Secretary shall record all doings of the Society, perform all correspondence, and with the assistance of the President collate and prepare the annual report and other matters for the public press.

6th. The Treasurer shall collect and hold all funds of the Society, and pay out the same only on the order of the Secretary, countersigned by the President.

7th. The membership fee shall be one dollar a year, payable in advance, and any person can become a member of the Society by forwarding the fee to the Secretary or Treasurer. All delinquent members shall be notified by the Secretary not later than February 1st of each year, and shall not be entitled to the annual report of the proceedings of the Society until their dues are paid. If the dues are not paid before January 1st, following, their names shall be stricken from the list of membership.

8th. There shall be an Ad Interim Committee, consisting of the officers of the Society and ten other members, residents of different sections of the state, representing specific districts, to be elected annually, whose duty it shall be to observe and take notes of new and rare fruits, the fruit crops, and other matters of interest to the Society during the season, in their several sections of the state, and report the same at the annual meeting of the Society. It shall also be the duty of the members of this committee to solicit membership to the State Society, and to encourage the establishment and promote the interests of local horticultural societies in their respective districts.

9th. The annual meeting of the Society shall open on the first Wednesday in December of each year, at such place as may be designated by a vote of the Society, notice of the time and place, together with the order of exercises to be

sent in due time to each member by the Secretary. At this meeting the President will be expected to deliver an address, and the report of the Ad Interim Committee, Standing Committee, Secretary and Treasurer, shall be read, and the usual business transacted, besides papers and discussions on horticultural topics.

10th. There shall be an Executive Committee, consisting of the President, Secretary and three other members of the Society, to be chosen by the President from the Ad Interim Committee elected at each annual meeting, which committee shall have general charge of the affairs of the Society.

11th. This constitution may be amended, and by-laws may be adopted for the government of the Society, by a vote of two-thirds of the members present at any regular meeting.

#### AMENDMENT.

At the Annual Meeting held at Newark, December 6th-8th, 1899, the following amendment was unanimously adopted, viz.:

The President of the Ohio State Horticultural Society is hereby authorized to appoint a commission of three, which committee shall make provision for the proper nursery inspection, providing no action shall be taken by the State Legislature.

## STATE FAIR MEETING.

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The State Fair Meeting of the society was held at Grange Hall, on the Fair Grounds, at 7 p. m., Thursday, September 6th, 1899.

President Cushman called the meeting to order and appointed the following committee on new fruits, viz: B. F. Brown, E. M. Woodward and E. G. Cox.

The President then announced that the society was ready to receive invitations for the Annual Meeting of the society.

The Secretary presented the invitation from the Pomona Grange of Licking County to meet at Newark, and moved that it be accepted. The motion prevailed.

The Secretary then spoke of the efforts that were being made to exhibit American fruit at the Paris Exposition and read several letters on the subject from Col. Brackett.

After thoroughly discussing the subject, the society voted to authorize the Secretary to correspond with leading fruit growers in the state inviting contributions of choice apples of leading varieties, for that purpose.

The Secretary inquired if he should offer premiums for fruits, flowers and vegetables at the Annual Meetings.

On motion it was referred to the Executive Committee.

The question of "How can the Horticultural portion of the State Fair be improved" was then discussed.

Mr. Brown said plainer labeling was one of the most urgent reforms needed.

The Committee which had that day awarded premiums on the county displays of fruits recommended that only five specimens of fruits be allowed on a plate and ten or twelve of plums, etc.

It was thought better to omit some of the poorer varieties of apples, peaches and potatoes now on the list, and increase the premiums on displays of plums and on county displays of fruits.

Mr. Montgomery moved that a committee of three be appointed to recommend changes in the premium list, their revision to include potatoes and all horticultural products.

The discussion of the topic, "Harvesting Fruit," was opened by Mr. Nelson Cox. He advised making three pickings of the winter apples when the trees were heavily loaded.

The first time he picks the ripest from the tops of the trees.

The second time, a week or ten days later, he picks the main part of the crop. This allows the branches to straighten up again, and admits the sunlight to the lower fruit and in a week or ten days it is larger and better colored.

He puts the fruit into the barrels at once and hauls to a large barn with earth floors.

He then repacks at his leisure, just before shipping.

He opens the doors of his barn during cold nights, and keeps it shut during warm weather, and frequently sprays the outside of the barrels to keep them cool.

The meeting then adjourned.

### REPORT OF COMMITTEE ON NEW FRUITS.

The committee appointed by the Ohio State Horticultural Society to examine the new fruits exhibited at the State Fair meeting would make the following report:

#### APPLES.

Champion Pippin, produced by Mr. M. C. Shiveley, of Chillicothe, O.: a large, green apple of fine appearance, but too immature to judge of quality.

Mr. N. C. Marion, of Amanda, O., exhibited a large, green apple resembling R. I. Greening in appearance. Mr. Marion described it as a golden yellow when fully ripe, equal in quality to Grimes' Golden or Yellow Bellflower. Season from March to blooming time.

Mr. J. R. Hurst showed a medium sized apple, white skin and flesh, resembling Maiden's Blush, of good quality.

A seedling apple was exhibited, large, flat, winter, larger than Baldwin in appearance, considered a promising new variety, and worthy of propagation.

Mr. C. R. Elsea, a fine plate of apples, large size, green, slightly striped with red. Resembles Western Beauty, but of better quality.

T. S. Johnson, a medium sized, oval apple, waxy in appearance, fine quality, name not known; considered very worthy of propagation.

#### GRAPES.

Hicks: shown by E. M. Woodard, from the introducer, Henry Wallis, of Wellston, Mo. Black with purple bloom, medium in berry and bunch, not considered by your committee to be quite as good in quality as the Concord or Worden.

A grape from Mr. N. Ohmer's garden, said to be a very rank grower and prolific bearer; name not given and not known by your committee.

A few other specimens of apples were on exhibit but were not considered worthy of special mention.

E. M. WOODARD,

E. G. COX,

B. F. BROWN,

Committee.

PROCEEDINGS  
OF THE  
THIRTY-THIRD ANNUAL CONVENTION  
OF THE  
OHIO STATE HORTICULTURAL SOCIETY  
HELD AT  
NEWARK, OHIO

DECEMBER 6, 7 AND 8, 1900.

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The 33rd Annual Meeting of the Ohio State Horticultural Society was called to order in Jones Opera House, Newark, Ohio, at 1:30 p. m., on Wednesday, December 6th, by the president, E. H. Cushman, of Euclid, Ohio, who said:

Ladies and gentlemen, it is now time to call the meeting to order. We shall be pleased to have you come forward and fill up the seats in front first in order that we may be able to hear better, and facilitate the work of the convention.

The first business in order this afternoon will be the announcement of the various committees provided for by the constitution and by laws of this society. I beg leave, therefore, to announce the following committees:

COMMITTEE ON FLOWERS.

F. E. Carr, J. J. Harrison, T. S. Johnson.

COMMITTEE ON VEGETABLES.

R. J. Tussing, H. H. Aultfather, D. N. Teeter.

COMMITTEE ON FRUIT.

W. J. Green, William Miller, O. Thomas.

COMMITTEE ON BUSINESS.

E. M. Woodard, W. H. Owen, C. W. Montgomery.



## COMMITTEE ON MEMORIAM.

L. B. Pierce,                      W. R. Lazenby,                      A. Shirer.

## COMMITTEE ON MEMBERSHIP.

F. H. Ballou,                      A. L. Seward,                      A. M. Nichols.

## COMMITTEE ON STATE FAIR PREMIUM LIST.

E. M. Woodard,                      S. R. Moore,                      J. C. Bear.

## COMMITTEE ON FINAL RESOLUTIONS.

J. S. Coan,                      C. C. Sterling,                      William Miller.

President Cushman: You have no doubt noticed by glancing at your programs that we have changed the plan somewhat from the previous meetings by putting the president's address as the first thing this afternoon, rather than this evening.

## PRESIDENT'S ADDRESS.

*Gentlemen, Fellow Members of the Ohio State Horticultural Society:*

We are here to-day through the cordial invitation of the Licking County Grange and citizens who are interested in horticulture, practical, scientific, esthetic.

This convention is an assured success because of the high standing of the organization whose guests we are; because of the excellent program prepared; because of eminent fitness of those who will present papers, and last, but not least, an audience capable of receiving and assimilating that which fits their needs, clear-minded, practical and up-to-date horticulturists, I trust, and know our commingling for the next two days will be a benefit to all and that we will be able to say the Newark meeting of '99 was a step in advance of all previous meetings.

We must keep moving, keep in the middle of the road, keep advancing, or get left.

Perhaps it might be well to look backward for a few years and briefly review some of our past efforts to better our system of spreading horticultural knowledge.

The change from a summer meeting to one held during the latter part of winter met with hearty support from all, but was found to be too expensive for our limited resources and of necessity was given up. As less expensive the plan of sectional meeting was tried during one winter and met with partial success. However, owing to its being so near like our institute work, and the difficulty of securing special speakers for these meetings, they have been discontinued.

The result of all this changing is the holding but one meeting, with the entire absence of anything that brings in the freshness of the early summer flowers and fruits. It appears to me a mistake to not hold a meeting at a time when nature is all activity.

The opening of trade displays by our society at its annual meeting has been more or less successful and merits more attention than it has ever received. I fully believe this society could well afford to make this a permanent feature of

our meetings. It should be placed in the hands of an efficient superintendent with suitable governing rules.

Probably no change made by this society has been as productive of good results as the issuing of our report at an earlier date, coupled with the missionary work done by our secretary and others, as they have circulated among the people at the institute. There is a possibility of hastening the time of issuing the report and it is hoped that all presenting papers before this society will deliver them at once to the secretary. This neglect seriously impedes his efforts to get out an early issue.

The naming of counties forming the adinterim districts is a recent feature, also the method of electing each member of the committee. It has not been found entirely satisfactory and it might be advisable to appoint a committee on revision.

At the last annual meeting the question of Horticulture at the Ohio Centennial was presented and duly referred to a committee.

It was hoped that by this means we might be able to get in touch with the management of the centennial and be able to give Horticulture the place she deserves among the great industries of our state.

It is hoped that we may be able to make a showing worthy of our great state and remembering the fate that befell us at the hands of the Ohio Centennial Commission in 1893 avoid or prevent a recurrence of a similar kind.

Better by far will be a proper representation of our interests at home in 1902 than any effort we might make abroad in 1900.

The horticultural department cannot be organized too quickly nor with too great care. The processes of nature are to be dealt with and it takes time to bring her products to greatest perfection. This is especially true of the ornamental features of the grounds. I especially hope you will give the committee report full consideration and concentrate your efforts along the line of a full and complete representation at our Centennial Exposition.

I feel that I would be remiss in my duty if I did not publicly call your attention to the fact that serious complaints are coming to the officers of this society of the pernicious methods of nursery agents sent out from this state. While this society is in no way bound to stand between these men and their victims it is the only organized body to whom complaints can be made. This is my reason for mentioning it at this time.

It is to be deplored that this society can be used in any way to give authority to persons who grossly misrepresent fruit-plants and fruits to make sales of ordinary varieties at high prices. Their methods are to defraud the public. They do defraud the public and they should be dealt with as all such are. They are an injury to the honest nurserymen and the whole horticultural fabric. This society by resolution or other public action should put its seal of condemnation upon such practices.

I feel that it would be very beneficial to our society if the time of choosing the annual meeting place be changed to the annual convention. It should take place previous to the election of officers and it would be well to adopt the custom of changing the vice president to the convention city or as near there as possible.

The position taken by our society on the question of controlling insect life is one which we have every reason to be satisfied with if not proud of. This and plant diseases are the most serious questions the horticulturists have to deal with.

It will take a great deal of effort to get at a practical solution of these problems and I hope that we may have full consideration of the report of the legislative committee.

I can see no reason why we should not have a state department for plant protection as well as a militia to protect life and manufactured property.

The whole line of field work should be a separate department from the work of the station staff, as much so as the military school is separate from the army.

In the advancement of methods and operations this state department feature will be evolved. A department of action, not one of study and development.

Our society will continually find opportunities to benefit horticulture. No definite line of work can be laid down for us to follow. We must ever be ready to rise to the occasion when required.

By papers and discussions we may hope to eradicate from our business and practices that which is bad, and conserve the good. We may be able to supply the information that the people want, send them a new inspiration, a better practice, a more successful result.

If we could have more of the "sinews of war" what work might we not do?

Astounding as some of the horticultural wonders are to-day, they are but the shadow of what is to be attained in the next few years. Men of brains are working, thinking, experimenting along the horticultural field as never before.

With this mighty concentration of mind and effort toward its development why may we not expect scientific, practical, commercial, ornamental horticulture to move onward with a mighty advance, bringing us into a new and higher development. Let us bend our efforts to that end.

President Cushman: The next business in order according to the program will be the presentation and discussion of the reports of the ad interim committee. I have the pleasure of introducing to you Mr. W. G. Farnsworth, of the First District.

Mr. Farnsworth: Mr. President, Ladies and Gentlemen: I beg leave to present to you my report for the First District.

#### AD INTERIM REPORT.

W. G. FARNSWORTH.

##### *Mr. President and Members of this Society:*

As the harvest of 1899 has now been gathered, we can look back over the season, and see where we might have been much more successful, had we known in advance what the weather conditions were to be. We may also profit in the future by that past season's experiences.

The season opened with good growing weather which started buds along rapidly, it being most too dry for strawberry plantations to do their best, especially where they were not protected from the severe winter. Where the roots were thrown out of the soil they were ruined by the wind and sun. The strawberry crop in my district was almost an entire failure except on fields that had been well mulched before the February cold spell, as at that time there was no snow to protect the plants and roots. They were so badly frozen and weakened that they could not produce fruit, and many of them were killed outright. Prices averaged \$1.70 per bushel at wholesale for Crescent and Lovetts.

Currants were a full crop with prices low from 75 cents to \$1.25 per bushel.

Gooseberries a very light crop and low prices.

Raspberries were a full crop, except some fields of Gregg which showed injury from severe winter. Prices were from \$1.75 to \$2.50 per bushel.

Blackberries were an average crop, but prices very low.

Grapes were a very short crop, with many vines entirely killed in the root by the winter, and especially the Niagara which seemed to suffer most in the

vineyard, though Concord and Worden were injured some. Prices were low though better than in '98.

Plums were nearly an entire failure as were also peaches, but prices were extra good, some Elbertas selling as high as 60 cents for one-sixth baskets, and Crosbys averaged \$2.00 per bushel for the whole crop.

Pears were not a full crop, though some varieties bore well, such as Keiffer, Bartlett, and Lawrence.

Cherries of the sour varieties were a large crop. Prices and demand exceedingly good. The quality was fine where they had been well cared for, except the large English Morellos, which were imperfect, although sprayed.

The apple crop for '99 was the largest for many years, though a large portion of the crop was blown from the trees before gathered, they maturing earlier than usual. A large per cent. rotted after being gathered before packing, owing to their being over ripe and the weather so very warm through October.

Insects and Fungus Diseases were about as troublesome as usual, except the leaf curl on peach, of which there was very little on unsprayed trees, and none on sprayed trees.

The Curculios were as numerous as usual and the second crop plentiful.

The San Jose Scale is still in my district in several places, though not in my immediate vicinity, and I am in hopes it will come no nearer than it now is; though from what I can learn there is one place where it has a foothold and they are not fighting it as hard as they ought to. I think the winter of '98 and '99 caused me more damage than all the insects and diseases have for many years, as it was something out of the usual, and we were not prepared, while we are on the lookout for insects, etc. Furthermore, I think from an examination of several of my peach trees and their roots that there will be many trees die next spring that leafed out, bore fruit and seemed quite thrifty the past season, since some of the roots are partially dead on one side or have dead spots in them.

Many Plums, some Cherry and a few Pears were killed by the severity of the winter, and the orchards that had been cared for in the best possible manner, were injured the most. Many trees standing in grass or weeds escaping all injury.

The prospect for the coming season is about as usual.

Strawberries have made a good growth and are in good condition, as are also Raspberries and all tree fruits except those that were weakened by the winter.

Our local Horticultural Society is in a prosperous condition. We hold our meetings on the second Thursday in each month, except July and September, and have a large attendance usually. I had the pleasure of attending the Wood County Society meeting in August. They have a good society, with interesting meetings, and are alive and up to the times, although just newly organized.

President Cushman: You have listened to the report of Mr. Farnsworth, and it is before you. What is your pleasure as to the discussion of these reports? Will you take up the discussion of each report separately, or will you have all the reports presented and then take them up in a general discussion?

Mr. Pierce: I suggest that we hear reports first, and then discuss them.

President Cushman: If there are no objections we will have all the reports presented and then follow with a general discussion. I have the pleasure of introducing Mr. N. H. Albaugh.

Mr. Albaugh: Mr. President and Members of the Society: I beg leave to present you with my report from the Second District.

## AD INTERIM REPORT FOR SECOND DISTRICT.

By N. H. ALBAUGH.

The counties composing the Second District are not commercial orchard counties, the fruit therein grown being mostly for home use and by amateurs. Especially is this true of the orchard fruits. The coldest streak in Ohio extends from west to east directly through these counties, as the backbone between the Great Lakes and the Ohio River lies here; hence the thermometer sinks lower, in cold spells, here than either north or south of them. In February last, beginning on the 8th of the month and continuing for seven days, till the 15th, the thermometer marked below zero, each morning, the lowest being 28° below, and for several days at a time it did not get up to zero, even in the middle of the day. Ordinarily this low temperature would have been destructive, not only to blossom buds, but to the trees and vines themselves. That this did not occur was doubtless due to the perfect ripening of the wood the fall before, and to the perfectly dormant condition of all buds and blossoms at the time. As it was, the peach buds were all destroyed, as well as the tenderer plums, cherries and pears; but the hardier plums, as the Japans, the Americanas, the Damsons, Lombard, Murdy, and a few others, were practically unhurt in bud or wood, while many of the older European sorts were killed in blossom and badly hurt in the wood. This most severe test proved the Murdy to be perfectly hardy, as the wood was not discolored in the least nor the blossoms hurt. All peach wood was very badly "browned," the Crosby probably the least of all.

Many persons cut back their peach trees in orchard or lawn—some moderately, some severely. Where cut back moderately, [all leading branches back to the thickness of a man's thumb] the growth made was fine, and a mass of new, thrifty shoots full of blossom buds was formed in a well shaped, compact top. Where cut back more severely, to the thickness of an inch and a half to two inches, the growth was slower in putting out, and not nearly so satisfactory. In low ground, where more dampness prevailed, many of the peach trees were killed outright by the cold.

It might be proper to say that in a county of the First District, but yet in the interior of the state and near the northern line of the Second District, a new seedling peach was especially developed, having withstood 28° below zero unhurt, either in wood or fruit bud, and bore a full crop of luscious, white fleshed, large and handsome freestone peaches, as the writer tested by his somewhat developed "taster" for fine flavored peaches. Such a variety undergoing such a test for hardness, and of such size, beauty and flavor, and ripening in that latitude about August 1st to 10th, has been deemed worthy of extensive cultivation, and the originator has placed it in the hands of a prominent nursery firm for exclusive propagation, and in due time it will be brought before the public under a name which is the very synonym of "*getting there*" irrespective of wind, weather or other mortal hindrances.

The Keiffer pear has risen another peg or two this year, in the score of value. It bore more this year than all the other varieties put together in our district, and brought an average of a dollar a bushel at the orchard or fruit cellar. As, year by year, growers and commission men are learning how to handle the Keiffer, it has risen in value from a rejected and maligned fruit to a high rank, even as to quality, among the mass of the people. The Ben Davis, though very deficient in flavor, is, nevertheless, at the head of the market, and so the Keiffer pear, though its flavor, to the taste of many, is fully equal to the best, and for cooking or canning it has no equal.

Among the newer black cap raspberries the Kansas is steadily growing in favor, as probably the very best, in all respects, of all the black caps.

Eldorado and Ohmer have forged their way to the front as the best blackberries. Both bore a full crop this year.

The sour varieties of cherries bore a full crop with us this year. The three very best varieties for our section, in the order of ripening, are Dye House, Early Richmond and Large Montmorenci. These three should be in every planter's collection. The Dye House, though smaller than the other two, is a week earlier than Richmond and is a very hardy and constant bearer. The Montmorenci is a week later than Richmond, but with its rich, red juice and its large size is superior to both the others. From twenty Montmorenci trees of about six years' growth I picked and sold \$1.00 worth per tree this past summer, not counting what the birds and boys secured.

European plums suffered from rot. Apples from rot and scab, raspberries and blackberries and the later strawberries from drought. Otherwise, the fruit crop of my district was passably satisfactory the past season.

President Cushman: We will now listen to the report from the Third District by Mr. A. Shirer.

Mr. Shirer: Mr President and Members: I beg leave to submit to you my report from the Third District.

#### AD INTERIM REPORT OF THE THIRD DISTRICT.

By A. SHIRER (Dayton, O.).

The past year has been one of extremes. Thirty below zero was followed by one hundred and thirty above zero.

The total rainfall would have been sufficient, provided it came at more regular intervals.

It is a question for our vegetable doctors to diagnose which has done the greater injury, 30° minus or 130° plus.

There is no doubt that if spring had been more favorable some of the trees, shrubs and vines that were injured last winter might have survived.

The question naturally arises, which are the most iron-clad varieties. The reports are very conflicting. One man says his Bartlett pear tree twenty years old was winter killed, while his young trees escaped. Another man says his young trees were either killed or injured, while the old trees escaped.

The so-called iron-clad Keiffer pear was more or less injured, especially the young trees.

Sweet cherries that were planted in the fall were killed.

Peach trees were either killed or badly crippled.

No apparent injury to the apple.

The grape vines acted the most mysterious of all. Some vines that appeared all right in March failed to bud out. Even the iron-clad Concord was one of them that acted thus strangely the present season. Some growers claim the vines that had an unusually heavy crop the preceding season suffered the most.

Raspberries, especially the black and purple, were considerably injured.

Our Taylor blackberry, as well as some other plantations, was again a complete failure. It is very evident that some of us have not the genuine Taylor.

Old-fashioned roses, that were always considered perfectly hardy, froze down to the snow line. Our Crimson Rambler, the first time, froze almost to the ground. The yellow and white Rambler was also frozen.

While the general appearance had a somewhat gloomy aspect, the strawberry steps forward a-smiling. The crop was fair, but many bushels were sold below the actual cost of production. No particular variety to recommend. Everyone has his own particular pet.

Currants and gooseberries bloomed freely but failed to set much fruit.

The large cherry crop predicted did not materialize. The Montmorenci is undoubtedly the best canning cherry.

Very few plums. Growers are still divided whether spraying plums pays.

The apple crop was greatly injured by the hot, dry weather. The keeping quality very poor.

I made some efforts to obtain a list of the most profitable variety of small and tree fruit. From the answers received it appears that the whims of the consumers are an important factor in deciding what to plant.

Nearly all, however, agree that the Ben Davis apple and the Kieffer pear are money-making varieties.

A grower of forty odd varieties of grapes says for profit the Worden for black, the Woodruff for red and the Niagara for white.

The prospect for the coming year is not very flattering. The hot, dry weather injured the strawberry, raspberry and blackberry plantations. Some grape vines look sickly. Election day found the apple and cherry trees covered with green foliage. Is this late shedding of leaves an injury or benefit to the trees?

#### INSECTS.

These pests were about as numerous as usual. The most destructive insect is that little mischievous plant louse. Acres of late nutmegs and pickles were a complete failure on account of this insect. Even the chinch bug appeared late in the season, riddling the leaves of sugar corn and devouring turnip tops.

#### PLANT DISEASE.

Some pear blight. Melon and cucumber vines held out longer than the preceding year, but were by no means free from the disease. Early potatoes were greatly injured by the blight. The report about Leopard spot on asparagus is conflicting. In our community asparagus had an unusually healthy appearance.

#### WEEDS.

The old edict "Cursed be the ground and thorns and thistles shall it bring forth" still prevails in spite of the poet singing "Joy to the world, the Lord is come \* \* \* Nor thorns infest the ground."

If some of our Northern friends who talk so fluently about the benefits of weeds run out of seed we can furnish them any quantity, both old and new varieties. We will not insure them, however, that they will grow as luxuriantly on the poverty-stricken clay ridges as they do in the garden of Eden.

The horticulturist of 1899 must admit that Moses did not make a blunder when he wrote, "In the sweat of thy face thou shalt eat bread."

Our County Horticultural Society is still in existence. Sorry to say, however, that the majority of her members are city horticulturists.

I had the pleasure of attending the November meeting of the Greene County Horticultural Society. There were representatives of four different county societies present. At this meeting the import of the circular issued by a committee of the State Horticultural Society was discussed. After a somewhat humorous discussion pro and con, the subject was finally dropped until more specific information is received about the free distribution of plants and seeds.

The different societies represented, however, agreed on one point—a closer union between the local and state society. They requested your servant to embody the following in his annual report:

To form a union between the state and local societies on a basis somewhat similar to that which exists between the state and subordinate granges. If such a union could be formed, then the present Ad Interim Committee should be abolished. The secretary of each local should be considered a member of said committee. The state societies should only pay the hotel bills of said secretaries while attending the annual meeting.

President Cushman: I have the pleasure of introducing Mr. W. H. Owen, who will present for your consideration the report from the Fourth District.

Mr. Owen: Mr. President and Ladies and Gentlemen: I beg leave to present my report for the Fourth District.

#### AD INTERIM REPORT FOR THE FOURTH DISTRICT.

By W. H. OWEN.

After that bitter cold wave of February 6th and 9th had passed over northern Ohio, the horticulturist of the Fourth District looked forward with much misgiving and speculation as to "What will the harvest be?"

Small fruits naturally must be badly damaged. Plums, of course, are ruined; and as for peaches, who dare to even presume there would be any of this popular fruit? We most naturally looked forward to a repetition of the season of 1897. Some orchardists were even willing to bargain their chances of having any peaches, at your own price. One of these offers, especially, came to my notice, where the orchardist said he would accept a good cigar for all the peaches he would have.

However, it was soon discovered that live buds were pretty generally scattered through most varieties of peaches, especially in the orchards in the eastern part of Ottawa county. This discovery completely and suddenly changed the attitude of these "doubting Thomases" and now they would not sell their prospective crops for less than \$4.00 per bushel, for you know the reports (as usual) are: "Peaches will be a universal failure for the season of 1899."

Let us for a moment consider the results attained from the different varieties of fruit:

The crop of strawberries and small bush fruits was not up to the average yield, owing partly to winter injury, but more especially to the decreased acreage, which was due to the result of their previous season's unprofitableness. Quality of strawberries, raspberries and currants was good, and prices for same much better than previous season.

#### CHERRIES.

All varieties bore a good crop and quality was never better.

Where but single spraying with Bordeaux and the arsenite poisons was made, most perfect fruit was the result. The Montmorenci of all the sour varieties, for a good bearer of good sized fruit, took the lead.

Prices averaged about \$2.00 per bushel, the season through, and demand was steady.

#### GRAPES.

Some of the Island regions, most notably Put-in-Bay and Kelly's Island, are holding their own in acreage point of view, but on the mainland, in Ottawa



county especially, they are nearly a thing of the past. The peach tree has invaded this once famous grape section and hundreds of acres have miraculously been converted into peach orchards in a remarkably short space of time.

Grapes on the Islands: The principal varieties, Concord, Niagara and Catawba, were slightly winter-killed, and the yield per acre was not up to the average. Quality was excellent and prices averaged about \$10.00 per ton better than previous season. They were practically immune from the many fungus diseases, and the untreated vineyards seemed to produce as perfect fruit as the treated.

Insect pests of the grape: The grape berry moth (*Eudemis botrana*) was noticeable on Put-in-Bay Island and in some sections of the mainland; and the Grape-cane, Gall-maker (*Ampsoglypter sesostris*) that has recently made its appearance near Gypsum, was again in evidence this season.

### PLUMS.

Yield was about one-third crop, except the Lombard, which averaged considerably better than most varieties. However, this old standard variety did not outdo some of the Japanese varieties. The Burbank and Abundance withstood the low temperature of February even better than some of the European varieties. The Burbank fruited heavily, and sold for about the same prices as the better European varieties. The Abundance was about two days too previous in opening up its beautiful boquet of blossoms which were caught by a severe cold rain and wind storm that practically ruined the crop. This seems to be the most serious question in raising these varieties — their unseasonable, early blossoming period.

Curculios (*Conotrachelus nenuphar*) were not especially destructive in their work on the plum and were easily held in subjection.

Plum rot (*Monilia Fructigena*) was not as prevalent as last season and but little damage resulted from this much dreaded disease.

### PEARS.

This fruit was usually a light crop, excepting the Kieffer. This variety, as usual, produced its ordinary yield, but owing to very hot and dry August, induced premature ripening, undersized fruit and of poor keeping quality.

Bartletts were very light.

Duchess produced about a half crop of fine, large fruit.

Prices on all varieties of pears were good and the demand in excess of the supply.

Less leaf and twig blight than last season; also, fewer slugs that work upon the foliage of both pear and cherry.

### QUINCES.

The Orange quince is about the only variety grown in the Fourth District for commercial purposes. This produced a good, average crop of fair-sized and well matured fruit.

### APPLES.

Erie county produced practically none of this "King of Winter Fruits."

Ottawa county apple orchards started out favorably, but through depredations of the Codling moth (*Carpocapsa pomonella*) the crop was materially lessened, and the yield was probably less than one-half of an ordinary crop. Fully 75 per cent. of the fruit from some of the orchards was injured by this pest, and the treatment heretofore relied upon for its prevention signally failed this season.

Verry little apple scab (*Fusicladium dendriticum*) and other fungi.

The crop matured early and keeping quality is correspondingly poor, as the consumer can testify.

Last, but by no means last,

#### PEACHES.

The season of 1899 was one full of surprises of success and failure to the peach grower of Ottawa county. The greater surprise to all, that there should have been any crop at all after the extreme low temperature of February. The mercury registering anywhere from 16° to 20° below zero, with a probable average of 17° on the morning of February 9th.

We have been led to believe that the peach germ cannot withstand more than 12° to 15° below zero, and then only under the most favorable conditions. It seems after this season's experience, we may add about two degrees to the previously adhered-to limit.

Going back to the fall of 1898, we find it was an ideal season for the proper maturing of both bud and wood. There was no unseasonable or subsequent warm weather in late fall or early winter, to promote premature development of the buds. There was also ample moisture in the soil; and thus, they entered winter quarters under the most favorable conditions to withstand the severe test of cold they passed through.

Some of the orchards bore nearly a full crop, others a half, third, quarter and some practically nothing. Adjoining orchards, containing same general varieties, were often found, one with a fair crop and the other with practically no fruit. The puzzling problem is, what were the reasons for the wide variance in the yield of these orchards?

Some orchards were badly winter-killed and many trees died, but most of this loss was directly due to the result of improperly drained land. Most of the sickly trees succumbed, and occasionally a strong, vigorous tree without any apparent cause would be found dead. I believe that all these losses and damage was confined to the roots and not the result of any freezing of the tops.

There was practically no leaf-curl (*Taphrina deformans*) or black-spot (*Cladosporium carpophilum*) and very little of the Pustular Spot of the peach.

Ample sunshine and beautiful weather, during period of ripening and harvesting, resulted in producing as well-matured, good-sized and good quality fruit as we have had for several seasons.

The Early Cling varieties all bore full crop, likewise the Champion, Crosby, Gold-Drop, Hills Chili and Salway. Both the Early and Late Crawfords bore scarcely any fruit and Mt. Rose was also light. Smock produced some less than half crop, while the Elberta probably averaged a full half crop.

The Elberta not only proved itself hardy in bud, but also retained its reputation as the best "money-maker." One orchard containing a block of 400 Elberta produced 650 bushels, for which the owner received the munificent sum of nearly \$1,700.00.

The Crosby, although a peach of the best of quality and small pit, cannot be recommended as a good commercial variety. It is surely under-sized, and thinning will not bring it up to standard. The trade now demands large, showy fruit, regardless of quality, and the small varieties go begging.

Better prices have been attained for this season's crop than have for the past nine years.

Ottawa county, or more properly speaking, less than three townships of the county, produced this season 155,000 bushels of peaches. This was less than one-third of the output of last year, but I am safe in stating that the orchardist received fully as much or more than they did for the large crop of 1898.

Fruit buds have set well for next year, but owing to the late and continued unseasonably warm weather, they have prematurely developed to such an extent as to cause uneasiness in the minds of the grower whether they are in a condition to withstand much below zero weather during the coming winter months.

I regret to say, the San Jose scale (*Aspidiotus perniciosus*) problem is no nearer the point of solution than it was one year ago. And I fear the situation will not improve until needed legislation is brought to bear in properly handling this formidable pest. We cannot expect to even be able to hold it in check, so long as the treatment is left practically discretionary with the grower. There is no danger from the careful, painstaking and up-to-date horticulturist, but that he will manage it satisfactorily, and continue raising fruit; but it is the negligent and careless grower (of which class there are entirely too many) that must be reached.

The careful treatment of an orchard will avail but little if the neighboring orchards are neglected, or only a pretense made toward their treatment. The man that neglects, or is not seriously thorough in his work, may expect to harvest infected fruit, and the unscrupulous will even place this fruit upon the market. This will pass, in the markets of Ohio, but it would be a rather hazardous undertaking to impose such fruit upon the markets of some of the other states.

It has been stated by some that the Scale will not locate to any extent upon the peach, owing to the objectionable fuzz which covers the fruit. This is an erroneous impression, for I have seen them as thick on this fruit as upon the apple, pear or plum. It is not necessarily from a badly infested tree that the fruit will be attacked by the insect. It will be found that on the under side of the leaf, along the midvein and on the fruit, are favorite places for its location. Probably this is due to the ease with which they can penetrate the epidermis. They, like many other of the creation, are on the alert for "easy jobs."

I am convinced that the scale is short-lived when located on the fruit of the peach tree; for of the hundreds of specimens examined, I found a very small percentage of living scale in any stage of development. I believe this also holds true when located upon the smooth-skinned fruits, but upon the latter the mortality is not as great.

By experience we have learned that where a single limb, or tree, has become badly infested and incrustated during the summer months, and is left until spring before treating, either the limb will likely be dead or the tree badly damaged. If such cases be given a fall treatment, no especial damage will be noticed from the result of its previous season's infestation.

The deleterious and poisoning influence of the scale upon the growing tissue of the tree seems to culminate during the winter months. The peculiar characteristic, red discoloration of the bark, is principally developed during the dormant stage of the tree. All this would suggest the treatment of all badly infested limbs or trees in late fall, soon as the foliage is off.

In conclusion I would say that this has been a most auspicious season for the propagation and dissemination of the scale. By the continued warm weather during November, I believe there is no doubt but what four full broods have developed this season, which will correspondingly increase the labor of extermination that will be instituted in the spring.

President Cushman: I have the pleasure of introducing Prof. W. R. Lazenby, who will present the report from the Fifth District.

Prof. Lazenby: Mr. President and Members of the Horticultural Society: What our friend, Mr. Albaugh, has said is equally true of the district which I have the honor to represent. Fruits are not grown there

to any great extent for commercial purposes. They are grown there principally for domestic uses. For this reason, therefore, in making this report, I have taken the liberty to say more about the county with which I am best acquainted, rather than the adjoining counties, and to speak especially with reference to its adaptability to fruits, rather than the fruits themselves.

#### AD INTERIM REPORT FOR FIFTH DISTRICT.

By WILLIAM R. LAZENBY.

In this brief report I shall confine my observations to Franklin county, in which I reside, as this county is fairly typical of the district I represent.

Among the cultivated tree-fruits the apple, pear, plum, peach and cherry are to be found in greater or less abundance in all parts of the county. The grape is also cultivated, but mostly for home use. Although the above-named fruits do fairly well at times, our capricious climate is very trying to all the more delicate varieties. As a rule it is only the more hardy sorts that are cultivated with any marked degree of success.

It is not the mere fact that the mercury in Fahrenheit thermometers occasionally falls to ten or even twenty degrees below zero, and that the soil is deeply frozen, but rather the suddenness by which such extremes succeed, and are succeeded by a temperature above the freezing point, that proves so inhospitable, so disastrous to many of our most valued varieties of orchard fruits. As the dense forests which formerly covered this state and clothed this county are now almost entirely swept away, the intensity of our frosts, or "cold snaps," and the celerity with which they appear and disappear, are aggravated and untrollable.

No one with open eyes has failed to observe that even our hardy forest trees are often killed by our capricious winters, and our fruit trees must suffer in the same way.

An arctic night, in which the trees are frozen solid, is followed by bright sunshine. The tree partially thaws, only to be solidly frozen again as soon as the sunshine is withdrawn. The trees in the warmest spots suffer the most, and fruit buds are often killed on trees that have a southern exposure, while those on the crest, or northern slopes of hills, may escape any serious injury.

Such being the general conditions of our county, except in a few favored localities, it seems to me undesirable for the average farmer who expects to make his main business the production of grain and stock, to attempt the growing of the finer fruits in a commercial way, for he cannot give them the seasonable and persistent attention which they absolutely require.

I do not wish to discourage fruit growing, but I counsel every farmer to thoughtfully consider the skill and treatment invariably required for the production of the finer fruits before he permits a tree agent or nurseryman to make a bill against him for a large orchard. On the other hand I would have every land owner test cautiously, unless he has already done so, a few of the most promising varieties, always including the more hardy, in the hope of finding some few adapted to his particular soil, and capable of enduring his local climate.

I have traversed this county pretty thoroughly, and I believe few have grown our tree fruits to profit except those who make it a specialty.

Disappointment in fruit culture is by no means a thing of the past. I admit that one can grow European plums, budded peaches and our finer grapes and pears outside of the climate most congenial to them, but this is a work wherein success is likely to cost more than it is worth.

As a horticulturist I do not wish to be unfair to Franklin county. According to the best data within my reach, our county is a fair average of the counties of the state in fruit production. That is, there are a greater number of counties in the state producing less fruit than there are producing more than Franklin. During the five years from '91 to '95, inclusive, the following is the average annual product of the principal classes of large fruits grown in the county — given in round numbers:

Grapes .....	11,000 pounds.
Cherries .....	365 bushels.
Peaches .....	870 "
Plums .....	625 "
Pears .....	1,750 "
Apples .....	117,800 "

This shows us that fruit, of the hardier varieties, at least, can be grown in Franklin county. Compared with some of our special fruit growing counties, the product is small. For example, instead of 11,000 pounds of grapes Ottawa county produces 4,500,000 pounds, while Sandusky, Cuyaboga and other counties in the grape belt are not far behind. Instead of 870 bushels of peaches, the county of Ottawa produces over 100,000 bushels, and one year ago last fall the peach crop of Athens county brought more money than any other single product of the county.

Small fruit growing as a commercial business has not attained very great proportions in Franklin county. One of the most successful strawberry growers with whom I am acquainted is Mr. Miller, the senior member of the Miller Fruit and Vegetable Company. There may be a few growers in the county who have larger acreage than Mr. Miller, but it is doubtful if there is any who markets larger or finer crops. I was told by a member of the firm, a few days ago, that Mr. Miller harvested twelve hundred bushels, the past season.

There are only a few extensive growers near Columbus, but near Groveport and Winchester more attention is paid to the culture of this fruit.

The Tussing Brothers, near Winchester, are successful growers, and I have heard that one man in that neighborhood has planted eight acres the past spring.

There are few individual growers in Franklin that raise over 200 or 250 bushels of strawberries. A considerable proportion of the berries now offered for sale in Columbus were grown in the southeastern part of the state, but the number of successful growers in the adjoining county of Fairfield is rapidly increasing.

As far as I know, raspberries we have almost ceased to grow or expect in this county. That dread disease, "the anthracnose," is responsible for this.

Currants and gooseberries are greatly neglected, although from my observation and experience I judge they are likely to prove as profitable as any fruit crop that can be grown.

On the grounds of the Ohio State University, I think the currants and gooseberries have paid better for the time and labor expended, and ground occupied, than any other fruit crop. Next would come the sour cherries, and then the native plums of the wild goose type.

President Cushman: I have the pleasure of introducing Mr. E. G. Cox, who will present the report from the Sixth District.

Mr. Cox: Mr. President: I desire to present the following report for the Sixth District.

## AD INTERIM REPORT FOR SIXTH DISTRICT.

By E. G. Cox.

The year 1899 has been fairly favorable for most fruits except peaches. We had five days in February that the thermometer registered from 20° to 30° below zero, which killed all peaches and Abundance and Burbank plums. Nearly all peach trees over seven or eight years old are dead. Trees three or four years old that were cut back and cultivated have made a good growth. I have trees nine years old that I cut back severely, last spring, but they are nearly all dead now; the sap was sour and the wood brown when I cut them.

Strawberries were an average crop and prices some better than last year. Tennessee Prolific was the best berry I had, almost as productive as Haverland, and the first two or three pickings were as large as Sharpless: they got smaller after that, but I got good pickings to the last. Glen Mary was next followed by Haverland. Clyde was a disappointment; it set too many berries. The first to ripen were large and nice shape, but the last were nothing but knots. It is too soft and lacks color. Bismark and Brandywine bore some nice berries, but they are not productive enough with me.

My father filled a quart box with 11 berries of Sharpless.

The prospect for strawberries next year is very poor. The white grub has worked in the last spring set plants all the season, and I haven't one plant now where I had fifty last spring. The grub did great damage in the corn and some say it damaged the early sown wheat.

Eureka took the lead in raspberries, and they sold for good prices all through the season. Nearly all the wild raspberries and blackberries were winter killed, and cultivated blackberries did not sell for less than \$2.00 per bushel. The first sold for nine cents a quart in the local market.

The cherry crop was not heavy and the cherries that were allowed to stay on the trees till they got ripe sold for good prices. Some rushed theirs to market as soon as they got red and the price went down to \$1.25 per bushel.

Lombard, Reine Claude and Pond's Seedling plums on high land bore a full crop, but on land 15 or 20 feet lower on the north side of the hill were nearly all winter killed. Bradshaw buds were all killed and the wood was brown at the heart last spring, but the trees have made a good growth.

Pear trees were injured some by the winter, Howell and Bartlett the worst: the bark bursted on the southwest side of the trees and some have died this summer. Keiffer buds were all killed, but the trees were not injured. The pear crop was light. Quince bushes were killed in low ground, but we had a few quinces on the hills. The Orange takes the lead, followed by Reas and Meech.

The apple is the main fruit in Lawrence county, and the Rome Beauty is the leading variety. It originated over 80 years ago and is holding its own yet. Early apples were plenty, and there being no peaches they sold for good prices. E. Harvest, Y. Transparent, G. Drop, R. Astrakhan, P. Royal and M. Blush are the leading varieties. There is some complaint of apples not keeping well, but ours that were sprayed thoroughly are keeping yet.

Spraying paid well this year. An expenditure of a dollar brought ten dollars. The scab was entirely prevented, but there were some wormy apples. I sprayed four times, twice before bloom and twice after, about two weeks apart. I think if I had sprayed twice more there would have been less wormy apples. I had one tree that was sprayed but twice that scabbed badly and about half the apples dropped. Trees 30 feet away were free from scab and scarcely any dropped. There were but two orchards in the county that were sprayed: they held their leaves till the middle of November and orchards that were not sprayed were scabby and the leaves dropped early.

We sold our apples for \$2.50 per barrel, while others sold for \$1.25 to \$1.50. We kept some Grimes' Golden in cold storage and just finished selling them last week at \$3.00 per barrel.

President Cushman: I have the pleasure of introducing Mr. F. E. Carr, of the Seventh District, who will present for your consideration the report from the district.

Mr. Carr: Mr. President and Members of the Society: I beg leave to submit the following report from my district.

#### AD INTERIM REPORT FOR SEVENTH DISTRICT.

By F. E. CARR.

Fall and winter weather got so badly mixed, last fall, that the usual "fall work" was cut short, and no opportunity to continue it came during the winter.

The extreme cold experienced last winter was attended by *bright sunshine* and I believe the sun did more damage than the frost; particularly is this true of ornamental trees and shrubs, especially evergreens, many of which still show the scorching they got during the zero weather. All varieties of fruit buds came through alive, except the peach; these were quite generally killed, and in some cases the trees were so badly damaged that they died early in the season. I believe the trees killed were those injured by leaf curl the season before. On our own place Mt. Rose and E. and L. Crawford suffered most. Crosby and Champion came through best and even bore a peach or two.

In our vicinity apples were an abundant crop, but almost every apple is wormy, and they are not keeping as well as usual. Whether the failure of the apples to keep is due to lack of vigor in the trees or some peculiarity of the season is a matter that I would like to hear discussed. Our orchard was thoroughly sprayed four or five times, and yet we got nearly all wormy apples, which shows that spraying *one* orchard in a whole township of unsprayed orchards is discouraging in its results, and yet it makes a great difference both in tree and fruit.

Pears were a fair crop, and but little blight noticed during the season.

Plums and cherries both bore well, and brought fair prices.

Sweet cherries were quite wormy, but did not rot as badly as the year before.

Sour cherries were particularly fine and less wormy than usual.

The Japan plum "Willard" was the first to ripen on our grounds; it is quite showy and fair quality. Bradshaw, Pond's Seedling and some other sorts failed with us, but Reine Claude gave a heavy crop of fine fruit.

Grapes gave a fair crop and those who sprayed their vines well had but little rot; but some did not spray at all and some of them had no fruit worth marketing. Prices were much better than for several seasons past: 12c for Concord and 25c for Niagara and Catawba were the prices we received. Campbell's Early bore for the first time with us. Moore's Diamond we consider one of the finest table grapes. Ulster Prolific is also a favorite.

Strawberries were a good crop generally and prices ruled better than last year, but at one time they were very low in Cleveland. The size and appearance of the fruit I think was much ahead of former years.

Three new sorts bore for the first time on our place, and all of them impress us very favorably. They are Henry, Sample and Emperor, Henry and Emperor being particularly fine for home use.

The canes of Early Harvest blackberry looked, last spring, as though they were killed to within a foot of the ground, but they leafed out the whole length of the cane and gave a heavy crop. Erie canes were not injured and they bore well.

Bina, a new sort, fruited for the first time with us and is very large and fine; resembles the Erie, but is finer, larger, and better canes.

Our Lucretia dewberry was covered up during the winter with tomato vines. They came out in good condition in the spring and bore some fine berries. We trim and tie up same as grapes, and it seems to me they ought to pay better than blackberries.

Raspberries, both black and red, were a good crop; prices were better than usual.

At "Woodside" some young chestnut trees bore some mammoth nuts. (Like those shown us last year by Mr. Hale.) They were "Numbo," "Paragon," "Ridgely" and the "Japan." I think there is a future for these large chestnuts.

Every vegetable gardner I talked with during the season expressed himself as well pleased with the crop and market generally. Nearly all varieties gave a good crop and prices ruled above former years. With us only two failures occurred: one was early and summer cauliflower, the other was Hubbard squash. The dry weather was responsible, I think, for both failures, and yet pumpkins did well. I note this difference between pumpkin and squash for Mr. Shirer's benefit. If anyone here can tell me how to grow cauliflower and head lettuce during July and August I shall consider it a great favor.

I find it impossible to make this report as *general* as such a report should be, to cover so much territory, for the reason that I am always very busy and am kept closely to our own affairs during the entire season and am not able to gather facts all over the district, but must confine my observations to what I have been able to learn from markets and from chance talks with others in the same line of work. Consequently if you find that I have referred too frequently to "*our*" operations in this report, please remember that "*our*" operations are what I know the most about, and if I am in error in regard to any of my statements, I plead the same reason that the learned professor did. The professor had just completed a dictionary that cost him great labor and study. But an old lady, in looking over the book, found a definition of a simple matter with which she was familiar, that was glaringly wrong. She was much surprised that so learned a man should make such a glaring mistake, about so simple a matter. So she took the book and went with it to the professor and, pointing out the error, asked how he ever came to make such a blunder. His reply was "Ignorance, madam, pure ignorance."

President Cushman: I have the pleasure of introducing Mr. L. B. Pierce of the Eighth District, who will present you with his report.

Mr. Pierce: Mr. President: I beg leave to submit the following report from the district which I was chosen to represent at our last annual meeting.

#### AD INTERIM REPORT OF EIGHTH DISTRICT.

By L. B. PIERCE.

As the last annual meeting was much too short for the program, and the published report too short for the Secretary's prospectus, I shall do my part this year toward shortening up by making my report as short as possible.

We had about the usual amount of weather to the square inch, and a daily record of it may be found in the Cleveland dailies.

I was recently reminded that we had a cold spell in the winter by a circular from the \$1,000 a year employe of the United States at Columbus, asking all sorts of questions about the effects of the cold upon trees in different exposures and localities.



Were it not for this circular I might have forgotten that the thermometer went to  $-23^{\circ}$ , as very little result came from this low temperature. The killing of peach trees and a plum and pear failure were the only results in my vicinity and the pears and plums blossomed fairly well but failed to set fruit. There was a full crop of sweet cherries and in many farmers' cellars the cans of cherries are nearly equal in number to cans of all other fruits. The Erie blackberry bore a full crop, as did the Lawton and numerous seedlings of the two, while there was but a partial crop of Snyder and the berries were imperfect. In spite of this fact I suppose my good friend Green, of the Experiment Station, will go on asserting that the Erie is only partially hardy. It seems to me that we have now reached a point where, instead of ascribing the failure of some fruits to produce annual crops to tenderness, we should ascribe it to the same causes which prevent Baldwin and Ben Davis apple trees from bearing annually.

The season just passed has marked a general slight advance in prices, owing, I suppose, to an enlarged buying capacity coming from a general starting of all industries, and probably next year will see still better prices, the result partly from inflation and partly from a demand exceeding the supply. I have mingled in the Akron market nearly a hundred times in the last five months with gardeners representing a territory nearly as large as Porto Rico, and all have confessed that in spite of winter-kill and summer drought, the season has been a fairly prosperous one and I know of instances where the profits from careful farming of a few acres have reached several hundred dollars above expenses. The best report of strawberry yield I have received was that of a grandson of old John Brown, who claims to have raised 240 bushels upon an acre. So it seems that the soul which once marched to the beat of a drum is now making a quick step along horticultural lines—now as then in the vanguard of progress.

The most profitable sale I saw made was that of less than half a peck of cucumbers, numbering one thousand specimens and bringing \$2.50.

The buyer claimed he turned the lot over to the consumer at an advance of twenty-five cents. It is needless to say that the specimens were very small, being but a day or two beyond the blossom. Cucumbers for slicing were very high and scarce, and after the middle of August only a limited supply of pickling sizes could be obtained. The cucumber, melon, pepper, tomato and onion blights prevailed to an alarming extent, but the blight which has killed purslane in former years did not appear to any extent and I was able to grow magnificent specimens in the same field where tomatoes and onions were sad failures. There was just about a supply of garden truck, but so near the scarcity point in some lines that prices ruled high.

Fine cauliflower brought at one time \$2 per dozen and cabbages sold to dealers at 85 cents per dozen as late as October 20. Port Clinton Elbertas sold at \$1.75 per snide half bushel basket, but later shipments sold lower, and there was a pretty fair supply of peaches all through.

About October 20 very fine Keiffer pears began to appear in bushel kegs, and were retailed at 35 cents per two quart measure. One grower had them labelled: "Fine Winter Bartletts." Another when he sold them advised the buyer to pare them before eating, so perhaps the curse which goes with the Keiffer is only skin deep.

Lima beans were scarce and brought fifteen cents per snide quart box, at wholesale. A specialist in Lima beans, residing in Granger, Medina county, set 480 poles and found later that the seedsman had furnished him with Burpee's Bush Lima, which is not so early and only about half as productive. The seed was bought in Akron and appears to be the result of careless changing of labels in a bucket from which the seed was taken, and may have been done by some heedless customer. Some handsome sloe plums from Medina county were offered

after the 1st of October and brought five cents per quart box. They were dark, purplish red in color, smaller than Wild Goose, and called Lincoln by the seller, who got the stock from Illinois. To the taste they were better than the average Japanese plums and there was only the merest trace of acerbity in the skin. Mr. Hand, who grew them, said they made very fine sauce, and I should judge that the statement was true. As all plums were a failure, it should follow that this variety is case hardened and bomb proof. Its goodness and lateness combined should certainly make it a valuable sort for experiment.

There were scarcely any Shaffer or Columbian raspberries marketed, but Mr. Haymaker claims to have gotten a full crop of his remarkable variety. I did not get time to go and see it. Everyone who has the Gault is complaining that it is a shining mark for the anthracnose, and on my own grounds it is little good from this trouble. I had a good many clusters in October but all dried up when partly grown, as do July berries when stricken with the disease in question. I was able to market a few quarts of a peculiar, new berry, which seems to be a sport from the Golden Queen. I call it Violet because of its color, which is a beautiful, violet red, totally unlike in color to any bush fruit I know. I sent some to the Experiment Station, but they got badly jammed by the express company in transit. It is very productive, but not as large as the Cuthbert. If not a sport, it must be a cross between the Golden Queen and the Cuthbert. I set a small plantation of Golden Queen, and in this lot were four plants of the Violet. I had had the stock four years at that time, and my first plants were procured from a neighbor who lost patience with the Golden Queen because it spread so badly and destroyed his plantation, root and branch.

President Cushman: We will now listen to the report of the Ninth District, which is represented by Mr. S. R. Moore.

Mr. Moore: I have the honor to submit the following report from my district:

#### AD INTERIM REPORT FOR NINTH DISTRICT.

BY S. R. MOORE.

*Mr. President, Ladies and Gentlemen:* In the district which has been given me, and Muskingum county, my home, is not different, perhaps, from any other county composing the Ninth District, I must say that, so far as known, the conditions in our county are applicable to all, or nearly so.

The winter of 1898-'99 was an ordinary one, until the second week in February, when the mercury dropped lower than ever before known. Reported from various localities, for days it ranged from zero to thirty below. At our own place on the morning of the ninth to the morning of the fourteenth, inclusive, the mercury ranged from zero to sixteen degrees below.

This proved fatal to the peach crop, and in some instances the trees were badly hurt. Pears were greatly injured; the same with cherries, only a few of each producing fruit. Quince bushes were nearly all destroyed, and blackberries and raspberries were more or less damaged, while currants, gooseberries and strawberries came through and made a fair crop, especially gooseberries.

The season opened about March 20th, with but little freezing or cold weather, and with only light frosts, which were harmless. April and a great part of May were extremely warm, and scarcely any rain fell until the latter part of May or the first of June, and many newly set trees and plants died for lack of water. From that on, until the present, just about the right amount of rain has fallen to make crops flourish and not delay work. I have no recollection of a year when the weather for September, October and November was so favorable for

growth and outdoor work; the ground never too wet to plant trees, more than a few hours, at any one time.

Considerable planting has been done and is still kept up. The apple crop was much better than we expected in quantity, but in most cases they were rough, knotty and inferior, selling in our market at 25 to as high as 50 cents per bushel. Considerable cider was made, and from the looks of many apples in the stores, much more ought to have been made.

The orchards did not all bear. Altitude appeared to make no difference, for about our own place the trees that bore best last season had but little fruit this season. Rome Beauty, Sweet Rambo, Evening Party, Lawver and Baltimore were the best, yet a large number of these were specked, and dropped before gathering time. I think but little spraying was done anywhere, as somehow when it has been done there did not appear to be any decided difference between sprayed and unsprayed.

One of my neighbors succeeded in having a considerable number of plums, mainly Wild Goose and the Robinson, which were loaded with fruit, and retailed in market at fair prices. Both of these are the improved native varieties of the wild type.

Black knot does not appear so bad as it did a few years ago. Curculio and many other insects are getting in their work of depredation about as in former years. At the last meeting of our County Horticultural Society, I asked how this season compared with others in the way of Horticultural products.

In some instances they were not so good, in others better, and some about the same. Potatoes were better, cabbage not so good, melons fairly up to former years, tomatoes and most vegetables good.

Our county fair was lacking in display of fruits, though vegetables were as good as any ever shown. Blight on pear continues about as in former years. About the time one gets a tree into good bearing age, away it goes with blight. Nut-bearing trees, aside from walnuts, were almost a total failure.

The noxious weeds continue to grow, and the weed law is not enforced, but few attempting to destroy the weeds, generally after the crop is fairly matured. Our residence part of the city is fairly well provided with shade trees, mostly Silver Maple. Lawns are better cared for and flower beds are largely increased over former years. Hyacinths and Tulips are most prominent for early blooming, while Cannas and Caladiums supply a large space later in the season.

There are many nice, attractive plants sold so cheaply that every home, be it ever so humble, should have some of the beauties so wisely provided, and so easily grown, yielding pleasure to the oldest down to the youngest in every household.

Allow me this one illustration or suggestion: Take as a starter fifty or a hundred Gladioli; the next season you would double the quantity by the increase of bulbs, and soon, by a little care, you have more than are wanted, unless for commercial trade. I find it so in our own home; yet there are so many beautiful colors that make one feel as though they ought to have more. They are not at all expensive, easily grown, greatly admired, and can be stored away like other things, and as I have said before, increased from year to year.

There are many other things requiring but little care, such as Crocuses, that bloom almost as soon as the snow is melted away and should have a place on every lawn. Our two parks, in close proximity to the city, have been planted this fall with beds of tulips and hyacinths for the first time. Trees planted some years ago have grown into a beautiful grove, largely trees of the Silver Maple, where the little cherubs in care of someone find pleasure during the scorching days of midsummer, instead of being closely cooped up in flats or tenement

houses, compactly built, with nothing green about them. Here they enjoy the cool breeze, rest, and refresh themselves.

Parks are as essential to a city as cleanliness is akin to godliness. So far as I know, there has been nothing new in fruits, flowers or vegetables of superior merit produced in this district. One thing is certain—we have in the suburbs of our city a good supply of small greenhouses. How long they will continue in existence can only be told by the future. Three of the number are within sight of me.

There is a lack of interest or a neglect by persons who ought to be interested, in having country schoolyards planted with a few trees. No school-building should stand alone in country or village without some trees surrounding it. This may not be so everywhere, but it is so in our county. I confess that the result of my work as an organizer of Horticultural societies is not a success. The only one that I have any knowledge of in the Ninth district is that organized in Athens county some years ago, and so far as my knowledge of that goes, I am not sure that it is in existence today. I do whatever is in my power to have our own members of the Musknigum County Horticultural Society become members of the State Society.

Plants, in most cases, and shrubbery appear to be well prepared to stand an ordinarily cold winter.

President Cushman: I have the pleasure of introducing Mr. C. L. Whitney, of the Tenth District, who will present the report for his district. I desire to say before he begins his report that although the hour is growing late, I trust you will all remain until the close of the session. We have a very full program, but I desire to carry it out so that we may not encroach on the next session.

#### MR. C. L. WHITNEY'S AD INTERIM REPORT.

*Mr. President, Ladies and Gentlemen:* My observations, like Mr. Carr's, will be largely from my own business. I have too much to do to permit me to travel over the district, composed of several counties which I represent, to any great extent, so that I was obliged to get a good deal of my information from hearsay. I want to say that the year 1899 has been very much like others, composed of ups and downs. Perhaps I should say also right here, of those who grow large fruits, that it was composed rather more of downs than ups.

Apples, peaches and pears were not good as a rule. To begin with, we might say that the apple crop was good in spots, and it was poor in more spots. It was very poor in my immediate section. There was not much of it and it was wormy. There were very few sound apples. Some of the orchards bore good crops and practically there was enough for home consumption. During last winter we had a cold spell, as all my predecessors have been telling you this afternoon. It was twenty-two degrees below zero and it was supposed to kill the fruit.

The pear was nothing much with us except the Kieffer. This variety in my own orchard bore a full crop. The other pears were small and generally wormy. Of the new varieties I may say that I started two or three, but can not speak fully in regard to them. I started the Henry and I think it is one of the worst varieties to blight that I have ever seen. I have some of the Sudduth pears and they seem very hardy, although they are not bearing yet. I grafted to the Koonz pear but they have not borne any pears yet and I can not report on them. I have also the Wilder. The Koonz seems to be the strongest grower I have at present. They grow five or six feet in the year and seem to blight very little. The Kieffer blighted worse for me this year than it ever did before.

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The peach crop was a failure this year. There were, possibly, a few peaches here and there in my section. The trees were not killed to any great extent, but they were more or less injured. My few peach trees did not seem to be very much injured, but they may show it more another season.

The plums brought a fair market price but the crop was not very good. I am trying the Gold, Red June, Wickson and the French Damson. I select these as I think they are the most promising and likely to produce something.

In regard to cherries, I desire to say that there are not many grown there. What are grown are generally found to be the Red cherry. In some sections of the district they are grown more extensively. Cherries were not very plenty in our market this year, hence, I concluded that the crops were not large. In Columbiana county they had some cherries, but I was not in position to know much about the size of the crop there. In making my observations this year I noticed a speck on the red cherry.

In making my report on the grape, I may say that strictly speaking we are not a grape section of the state. We have about the usual crop I think. They rotted considerably on my grounds this year, some varieties showing more tendency to rot than others. I had a few of the Early Campbell and they rotted for me quite badly. I planted a few of the McPike and I hoped to get some satisfactory results from them. The early Ohio I have tried to my satisfaction, and I call them good for nothing. The hired man and the children used to eat them, but I consider them of no account. I have been experimenting with a grape called the Horsford, which I got from Michigan. I think they are a good grape. They are of good size and the pulp is well flavored.

Mr. Whitney: The name of the grape is the Horsford and they seem to be a very hardy grape. They are blue in color and quite large. They are about the same as the Eaton.

Member: How does it compare in quality with the Concord?

Whitney: I cannot tell you. I do not know yet in regard to them, but they promise well. I think from my own experience that the Green Mountain is the best early grape that is grown.

Member: Does it shell off much?

Whitney: Yes, the chickens shell them off. I have made some tests of the Columbian grape. I purchased some vines from Josselyn but in my opinion they are not a very good grape. The Columbian grape bore well. On the poorest ground they grew better than the others. It rotted badly for me. From my experience with the varieties of grapes I could not say which is the best. Several of the varieties have good points, some excelling in one point and some in another.

Blackberries were a poor crop this year. I do not think the plants were so badly winter-killed, but there were not many berries in the market. I think perhaps the cause of this was not that the plants were winter killed, but because the patches were allowed to go the way of all the earth, because the prices were so poor. I think that low prices for several years have been the cause of many persons allowing their patches to take care of themselves. The prices this year were a little better but there was no fruit to amount to anything. I have started the Rathburn blackberry, but I cannot yet report fruit from them.

The raspberry crop was, I think, poor in this state and the prices of course were good. My young raspberries were good and bore well, but my old vines

were very poor. There were not a great many raspberries shipped into our town this year. They brought \$1.25 per bushel readily in the market. I had a large number of the Columbian and they were not badly killed. I do not think they are as good a berry as the Schaffer, but they stood the winter last year very well. In regard to the Cumberland I may say that I had a hundred plants. It was a nice berry and they bore well.

In regard to gooseberries and currants I may say that the crops were good for both of these products, but the prices were so low that our people did not find it profitable to grow them. A few years ago both these crops brought good prices, but all this is vastly changed now. You have to sell them for five cents a quart, and even as low as four cents per quart, which makes the growing of them very unprofitable to our people. I think the early Lancashire are the best for the market. It is a berry somewhat similar to the Red Jacket. The Lancashires bore immensely well with us.

In regard to the currants I may say that we had a good crop, the best I think of for several years. In fact I think this crop was generally good in that section, especially where the plants were cared for. I have been trying some of the new sorts. I do not like the Prolific. They are not large, and my idea now is that perhaps the Wilder would be as good as any.

Strawberries were good in our section. We get good prices now, but it is with these as with everything else. One man goes into the business and the next year his neighbor goes into it, and in a short time the market is overstocked and then the prices go down. Last year we got \$1.25, but the prices this year were a little better. They started out at \$1.25, but at the end of the season they were worth \$1.35 in our town. Of course if a man lives near the town and can save all his expenses except the baskets, he can do very well at that price, but if you have to ship them and pay freight you cannot make any money.

One of the leading varieties is the Crescent. I do not grow it to any extent. I grow the Warfield more than any other. The Bubach, Crescent, Brandywine and Haverland are the leading varieties in that section of the state. I am growing the Greenville. You will remember that last year the Clydes did not rot at all for me. It was not a bad season for rotting, but they were as good as any I had. I have been testing some of the new varieties. Among these are the Earliest and Early Sunrise. The Earliest may be good, but they are too small. I may say that the Henry, with ordinary care, was nothing at all. The Carrie with me was of no account and it did not produce a half crop. The Glen Mary is a fair berry, but it produces too few to be profitable to the grower. The Nick Ohmer I should say is no good. It did not produce one-eighth of a crop. It was perhaps a little unfortunate in its planting, but it had ordinary care and it did not do any good. I have thus tried to give you a report of the fruit as I understand its condition in my district.

President Cushman: Our reports from the committees have been very interesting and we should like to spend some time in the discussion of each report, but the hour is growing late and we have another subject on the program yet for this afternoon session. If we take time to discuss these reports now we shall not be able to finish the program and I am opposed to allowing any part of one session to go over to another session. I think all the subjects on the program for one session should be finished at that session. If there are no objections I will proceed with the program. I have the pleasure of introducing Prof.

W. J. Green who will now address us on the subject of "Fruit Notes for 1899."

Prof. W. R. Green: Mr. President and Members of the Society: I thought when I heard the reports of the ad interim committees I would say nothing about the weather, but I must say a little something. The temperature at Delaware, Ohio, is about the same as ours. The hot weather of August and September had no effect upon the trees. If the society will pardon me I will sit and read my report as I can get better light.

#### FRUIT NOTES FOR THE YEAR.

By W. J. GREEN.

Last winter was remarkable, not merely because of the extreme cold, but because of the curious and unexplainable effects of the cold. In the winter of 1896-7 the mercury fell to 15° below zero at the Station, and last winter to 26 below, and yet the injury to fruit buds was greater in 1897 than in 1899. While the above statement is true, in a general way, there are unexplainable exceptions. Cases were noted where trees of certain varieties of plums bore almost a full crop, last season, and other trees near by, of the same varieties, had the buds nearly all killed. There was even much difference in branches on the same tree. We have commonly supposed that when peach buds are killed that the tender varieties of blackberries will be killed also, but such was not the case last year, for even the Early Harvest bore a fair crop. Red raspberries did not suffer, but both European and Japanese plums received more or less injury. Some peach trees were killed outright, but not in such a manner as to give any clue to comparative hardiness of varieties.

These facts are mentioned, not because they explain anything, but rather to show that in spite of the severe winter through which we have passed we are not much better able than before to say which are our hardiest varieties. Comparative hardiness is better determined in a less severe winter, but in all cases care needs to be taken not to generalize too quickly. The first apparent effect of the cold weather was to start a surprising crop of theories, some new and some old. One of these was especially harmful. People jumped to the conclusion that if a certain degree of cold does harm a lower degree does more harm, in the same ratio as the fall in temperature. In consequence, there was a fright among fruit growers, amounting almost to a stampede in some places. A great many were sure that their trees were killed and some could hardly wait for the ground to thaw before digging them up.

The Experiment Station was appealed to, in many cases, and the advice given was to prune closely and to await further developments. Just what harm could have come in following such advice does not appear, but certain it is that many trees went on the brush heap that might have borne a crop next year. Many other trees, and by far the greater majority, have stood all of the season, in a half dying condition, with their long sickly branches as evidence that their owners do not believe in close pruning.

Both pruned and unpruned trees were injured and killed outright, but I have not sufficient data to say which suffered the greater injury. Of those pruned and unpruned since the hard freeze in February, however, I do not hesitate to say that the latter now show the effects of hard freezing more than the former. Those who failed to cut back their injured peach trees missed an opportunity to get them into proper shape for future usefulness. Another theory which worked harm was the belief that a branch is killed because there is a yellow appearance

in the pith. Many thought that because the pith and the wood under the bark turned yellow that the trees must be dead. It did not seem to appear reasonable to some that if a tree has been injured that it might be easier to repair damages if part of the top is removed. Most fruit growers understand the necessity of pruning the tops of trees when they are transplanted, but comparatively few realize that when a tree has suffered injury from freezing, the roots as well as the tops are enfeebled, hence the reason for close pruning of tender trees after a severe winter. It is not intended in this connection, however, to discuss principles as much as to state facts of observation, but if an occasional deviation will do any good perhaps it is pardonable.

In traveling about the state one often finds striking examples of how the same thing may be accomplished by different methods. The orchard of Mr. F. P. Vergon, of Delaware, is a case of this kind. His orchard, planted twelve years ago in a blue grass sod, bore as fine a crop last season as it has every been my good fortune to see, nor was this the first crop. Large holes were dug in the sod, the trees carefully planted, and never neglected. The trees were dug about at first and in a few years were mulched with cinders, to keep weeds down and the mice from the trees. The field was never plowed, but the grass was mown for hay. Under this treatment the growth was fair, but not as strong as if the whole surface had been cultivated. Two years ago he asked my advice with regard to the advisability of mulching the trees with grass from between the rows. My reply was to the effect that if the trees were continuously mulched hereafter that the plan seemed to be a good one, but if it were omitted after a time there might be injury, due to the fact that the feeding roots would, most likely, be near the surface. This latter statement was founded upon theoretical considerations, but I had no doubt then, and do not now, that trees thrive as well, or better, when mulched as when cultivated. No trees, even under the most thorough cultivation, ever carried their crop better than did Mr. Vergon's during last summer's drought. This instance is recorded here, not because it is recommended as the best method for all cases, but because it carries some elements of instruction.

When this society met at Athens a discussion arose as to the best plan of cultivating a peach orchard on hill land so as to prevent washing. Why could not this plan be adopted, provided the hill land were not so poor that it would not produce grass? Mr. Cox has practiced it more or less for some time and, I believe, has found it beneficial.

At the Experiment Station we have plowed half of the bearing orchard and have found cultivation beneficial, but in the plowed portion were a few Maiden's Blush trees, and to save the windfalls we have mulched these trees each season. This has been still better than cultivation alone. Cultivation has retarded the ripening of the apples and has increased the size and, on the whole, I think has paid. There was a question, at first, if plowing would not do harm by breaking the roots, as the trees were about twenty years old. The only effect visible the first season was a slightly premature ripening of the apples on the trees in the plowed portion, showing that there had been some injury, but it was soon repaired, and now the cultivated half is slightly better than the other in appearance of foliage and of fruit.

Sheep have been kept in the orchard to eat the fallen fruit, but the result was not fully satisfactory because of the extreme dry weather, which caused many apples to drop prematurely, even those that were not wormy, and then a severe wind blew off fully half of the crop, just before picking time. The sheep would not eat the apples which fell on the plowed ground. Hogs would have answered the purpose better in this case, but sheep were chosen because they are more cleanly, and because they keep the grass more closely cropped. Close



cropping of the grass is desirable as the grass robs the trees of considerable moisture if allowed to grow tall. By keeping the grass down, and feeding the sheep heavily with bran, the loss of moisture is at a minimum and there is considerable fertility restored, especially phosphoric acid from the bran.

Sheep are certainly to be preferred in an orchard in grass, but in a cultivated orchard hogs are better.

Mulching the trees in early summer with the grass from between the rows and pasturing with sheep later seems a possible combination worthy of trial.

The apple crop of the state, in the aggregate, was a light one, and there appears to be no section where there was a good crop in all orchards. There may have been cases where a good crop was secured without care, but I have heard of none such. So far as my observation goes the good crops were coincident with good care, and if there had still been any doubts in my mind regarding the necessity of conserving moisture and of combatting insects and fungi they would now be removed. Last season is only one in a series which illustrates the same thing, but to the careful observer it shows more clearly than most others that the apple crop belongs to those who care for it. About once in ten years everybody gets a crop, and there are parts of crops interspersed. It is evident that Nature is not disposed to do much more than this, and the unfortunate thing about it is that she does so much. Neglected apple orchards bear just enough fruit to make trouble. They menace the apple grower quite as much as the black-knot and yellows do plum and peach growers. It may be going too far to ask a remedy for this in law, not because it would be unjust to cause the destruction of worthless orchards, but because it would be impracticable.

Concerning new varieties of fruit there is not very much to say, for the really good new sorts are not plentiful.

The Missouri Pippin has the reputation of bearing fruit at a very early age. Our trees at the Station bore at three years from planting about as much as five year-old trees could be expected to bear, but two years have elapsed since then with no fruit at all. It has the merit of good color and keeping qualities, but is rather small. Its proper place would seem to be as filler.

Bortz has borne a few fruits and though small is highly colored. It is said to be a good keeper also.

Gano, if we have it true to name, is hard to distinguish from Ben Davis. If there is any difference in the fruit from our trees it is in favor of the Gano in size and color. It appears to be worthy of trial.

Bismark has not given much fruit, although the tree has been planted three years. If we might judge from the behavior of a single tree there are plenty of other varieties as precocious as the Bismark, but it is just as well to suspend judgment for a time. As to quality, however, it is decidedly inferior and I doubt if it will find a permanent place among valuable varieties.

Yellow Transparent is not only holding its ground but is gaining in favor. As an early market variety it seems to take the lead, because of its habit of early bearing and freedom from blemishes.

Charlottenthaler closely resembles Yellow Transparent with, possibly, some advantages in vigor of growth.

The Willow Twig has a local reputation in the eastern part of the state, along the Ohio river, where it has been planted quite extensively. Across the river, on the West Virginia side, it is grown still more extensively. Its keeping qualities make it very popular, but it is regarded as a sure cropper and as less subject to the attacks of the apple worm than most other varieties. It is said not to succeed as well a few miles back from the river as close along the banks. It is favorably known, however, in other sections and it seems possible that its value has been overlooked. It is very late in coloring on the tree and is often

left until November before picking. This may explain why it does better near a large body of water than inland. It is worthy of a more general trial, however, because of its keeping qualities and its ability to hang on the tree until freezing weather begins.

It is worthy to note that Ben Davis is still growing in popularity. All that has been said against its quality seems to have had no effect, nor do orchardists here seem to be disconcerted because it is largely and successfully grown in the southwest.

An unanswerable argument in favor of the Ben Davis is the fact that it gives crops when most other varieties fail. It is a sure cropper and an early cropper and there is no question about its profitableness at present. Its future no one can tell anything about, but it is my opinion that while the time has not come for Ohio orchardists to discard Ben Davis it is important that they look for something else, to take its place, in part, at least.

Regarding new varieties of fruits, in general, there is not much to be said. Plums will be discussed in another connection. Peaches and pears were so near a failure as to give but little opportunity for additional study and comparison. Small fruits were abundant but the new varieties of merit are not numerous.

Sample is one of the best of the new strawberries. The foliage is clean and healthy and the berries are large and attractive in color. While not an excessive plant maker it is vigorous enough and quite prolific.

Carrie hardly needs further comment than the statement that it seems likely to supplant Haverland, because of better color.

Clyde is not surpassed in productiveness by any variety, but needs restriction as to runners, as it sets too many plants. For a medium grade berry to sell in nearby markets it stand unrivalled, but it can hardly take rank as a fancy variety nor as a shipper.

Superb has been on trial several years but is not generally known among fruit growers. The berries average quite large, are highly colored and of excellent quality. If not allowed to set too many plants the berries are large and plenty of them.

Brownie is another little known variety. The plants are dwarf, or compact in habit, the berries are large, firm, highly colored and late in ripening. For home use or fancy market, it appears to be promising.

Hunn has been highly praised as a late sort. It is late and large, but our experience with it thus far indicates that it is not prolific. It seems to be no exception to the rule that late varieties are unproductive.

Granville has not, I believe, been introduced, but as its home is near here it seems proper to mention it. It is somewhat of the Miner's Prolific and Chas. Downing type, the berries having the habit of not coloring all over, which does not detract, in the least, from its appearance. In productiveness it about equals Chas. Downing, but is larger, and the plants are less subject to rust. It is pre-eminently a berry for home use, especially for canning. It holds its shape when canned equal to Warfield and Enhance and is far superior to either in quality.

There is no reason why there should any longer be complaint regarding the quality of strawberries with such varieties as Granville, Marshall and Burnette.

The Haymaker raspberry is unknown to the majority of the members of this society, except in reputation, but it is now offered for sale.

It is a wonder in growth and productiveness, and I think it will eclipse both Columbian and Shaffer. It belongs to an unpopular class of raspberries for market. The purple sorts never have been sought after by fruit dealers, but there have been numerous cases where a demand has been created by enterprising growers.

The disseminator of the Haymaker had no natural advantages in the way of markets, but the demand for his berries in the small towns and country around has been remarkable. This speaks well for the berry and shows what might be done in other localities.

The Buckeye, another new claimant for public favor, about to be introduced, is a blackcap somewhat like the Gregg, but possibly a little larger. Its value remains to be determined, but it appears to be well worthy of general trial.

Cumberland, another blackcap, appears to me to be very promising. It is a vigorous grower, prolific and of large size.

Among blackberries nothing new can be offered. My report on Rathburn last year was not very favorable and I do not see any reason to speak highly of it as yet.

Mersereau has not been fully tested.

There does not appear to be anything especially interesting and new among other kinds of small fruits, at least there are none that have been sufficiently tested to warrant giving an opinion concerning them.

Mr. N. H. Albaugh: I want to say that I have seen both kinds mentioned in the report on exhibition in the same year. I have both kinds of the fruit. They are not the same. There is little difference in the growth.

Prof. Green: I think I discovered a difference. The Willow Twig seems to ripen late, hence it does better near a body of water. It is a remarkable apple in some respects. They gather them about the first of September or a little later. It hangs on the tree well, in fact, it does not fall off at all as some others do.

Mr. Albaugh: I want to say in regard to the Ben Davis and the Gano that we have such a demand for these apples that we are making one-half of our planting of these alone. They claim that these varieties make money for the farmer, and for this reason we have a great demand for them among our customers.

Prof. Green: I want to say in regard to the peach sent to me by Mr. N. H. Albaugh that I received it and I think it must be a very hardy tree. It is like the Champion somewhat, but it is a little better color than that peach and I think it is a little earlier too.

N. H. Albaugh: I think that the flavor of this peach is better than the Champion. That is my observation.

Mr. Harrison: I would like to ask Mr. Albaugh if he knows anything about the Superb.

Mr. Albaugh: Mr. Chairman: I know very little about the Superb. I have seen some samples of it, but I am not prepared to make any definite statements with regard to it.

Mr. Counter: I would like to ask Prof. Green in regard to the Granville, whether it is a good variety and whether they seem even in size.

Prof. Green: I think they do seem even in size.

N. H. Albaugh: I think it was very unfortunate for this peach that it was so near Greenville in name.

Member: I am not favorable to the Rathbun. It is a sort of cross between the Dewberry and the Blackberry. The Mersereau I have not fully tested.

President Cushman: Gentlemen, the subject is open for discussion and we hope you will use the time for questions and discussions.

L. B. Pierce: There is one point I wish to speak of and that is that the Ben Davis apple as it is grown in Kansas is a different apple from the one grown in this state.

N. H. Albaugh: I want to say in regard to the Gano that I got them from the originator. It seemed to me that this variety was actually what it purported to be, a cross between the Baldwin and the Ben Davis, with some of the qualities of the Baldwin but with a major part of the qualities of the Ben Davis, but not so light in flesh I think. I had a dozen specimens of the apples, but they were not so light in color as the Ben Davis nor so yellow in flesh as the Baldwin, but there is some half-way point between the two. If it had more of the flavor of the Baldwin it would be more acceptable to the taste than the Ben Davis. It requires great care. The Gano seems to have more vigor in its twig growth than the Ben Davis. With a little more of the qualities of the Baldwin it would be still better. We sent to some parties and got 50,000 and we thought we would be sure to have the true Gano. In the Western States they call it the Red Ben Davis because it is a little more of the color of the ordinary Ben Davis. I think it is well to look carefully as to the two varieties, Ben Davis and Gano. If you see them both together you will say that it is the Ben Davis variety. In speaking of apples I want to say that there is another apple that is beginning to take considerable prominence. We have tested them for several years in the Miami valley and we have been pleased with their appearance and their flavor. I refer to the Pewaukee apple by Pfeffer, of Wisconsin. It is probably of Russian origin. It is perfectly hardy and is a fair stock grower. Nurserymen can propagate it without doing it at the losses that we have with the Jonathan.

Probably the earliest prolific variety is another apple which also is of Russian origin and that is the Wealthy. It is one of the late fall apples, but we must remember that the people who raise the Duchess can ship them here and make money. They will bear well too.

Miller: Will they bear as well as the Wagner?

N. H. Albaugh: I think they will. The Wagner has a limited space, but the Wealthy seems to succeed everywhere. It is a good apple to cook at any time. It is a fall apple with us, but in Minnesota it is a winter apple.

Mr. Montgomery: I would like to ask Mr. Albaugh what to recommend for fall cookery.

Mr. Albaugh: I would recommend the Wealthy.

Prof. R. W. Lazenby: I wish to say in reference to the severity of the winter spoken of by Prof. Green, that the horticulturists have seen some striking illustrations that a severe winter sometimes kills the tops and sometimes the roots of the trees are injured. My attention has been called to this in Columbus this spring. A large number of trees, especially Maples, planted between the foot pavement and the curb, appeared to be all right in the spring, but they died suddenly, and the question was, what was the trouble with them. We dug up a number of these trees and examined them, and found that the roots were killed by the winter. They threw out a few roots in the early spring, but as soon as the warm weather came on they died. It was a striking fact in this case that the roots were killed and the tops were not injured. I believe that we should not mulch too heavy.

Prof. Green: I would say in regard to mulching that if you begin you must continue it, because under a system of mulching the roots have a tendency to work towards the surface.

Mr. Carr: I want to ask the speaker in regard to apples with reference to their keeping. Sometimes apples that are perfectly sound when picked do not keep well. Apples rot worse in some seasons than in other seasons. I would like to ask if anybody has a theory in regard to this matter.

President Cushman: I see this is one of the questions on the list and that it has been assigned to Prof. Selby. I will therefore call on him to answer it.

Prof. Selby: Mr. President, that is a hard question to answer. There are so many factors to be considered. It is like the question of marriage which depends very much on the circumstances and the parties and many other things. In this matter of fruit rotting this year, there are several factors. In the average apples, as I have seen this year, I have noticed that there is a large amount of specks and a large amount of perforation. Some of it is probably due to fungi and some to insects which have perforated the apple skin and caused it to decay. That is a general proposition, but it has a particular application this last fall, because we have had very high temperature, and such a temperature would develop these fungi. We have had many extremes of weather during the past year and these different factors were all combined to make matters worse. But I think after all we must refer these back to those abnormal weather conditions. The apples lost their moisture, and I think we can find a partial or even a complete explanation in this. I have noticed in the case of apples, how much they have shrunk, and I take it that the cause of this is found in these conditions, which are favorable to this change. It seems to me that all these causes operating together would produce a large amount of rotting.

Mr. Bauman: I have noticed frequently in apple seasons, that when the season is hot, that the apples are picked earlier, because they

ripen sooner, and apples picked earlier will not keep as well. I believe that the fruit crop has been much earlier this season than formerly. I think the bloom came off much sooner than usual. I think if we pay more attention to the time of picking our fruit it will keep better.

Secretary: I find that when fruit ripens prematurely it is not a good keeper. Then taking into consideration the high temperature of October, I can see a reason for the rotting this season. I examined fruit in a hundred orchards. I found that when the orchards were young and vigorous the apples kept much better than they did from the old orchards.

Mr. Carr: As I understand, this association generally favors the picking of apples when matured. I would like to ask Prof. Green whether by picking fruit without regard to time we could put them into cold storage and keep them.

Prof. Green: Yes, that is where the cold storage comes to be of value. By putting your fruit in cold storage you can save it.

Mr. Carr: Do you favor early picking of apples?

Prof. Green: I think if you leave them on the tree you will lose some. They will keep better on the tree, but it is a great saving to pick early.

L. B. Pierce: There must be something else in the cause of apples rotting because there were millions of them picked early.

Prof. Selby: In the question raised by Mr. Pierce we can see another point. Any condition that will produce premature ripening will cause the fruit to be less perfectly developed than in a case of ordinary ripening. The fruit will break down sooner after picking.

Wm. Miller: Apples to keep best, should be taken from the tree as soon as maturity is reached, as indicated by the ripened seeds. After this period the ripening process begins and proceeds with more or less rapidity according to the temperature in which they are kept. With most winter varieties in our latitude the maturity point is reached by the middle of September. Owing to the hot weather this year the ripening process was far advanced on the trees by October, the time when apples are usually harvested, and for the same reason went on much faster after harvesting, so that December finds the best keepers as ripe as they usually are in April, while the earlier sorts are already past the point where rotting begins. The Grimes Golden in our own orchard were placed in cold storage about the middle of September. The greenings picked two weeks later we find are rotting much faster, although they are considered better keepers.

Prof. Selby: Mr. President: I wish to say right here that I am impressed with the fact this afternoon that we have never had superior ad interim reports to these of today. It is a matter that is worthy of commendation and I wish to say so in this meeting. I think every one feels just as I do and that the impression is general. I feel proud of it and it is one of the things to our credit.

Mr. Scarff. I think they should be complimented for being here and answering to their names. I believe all the districts are represented.

Pres. Cushman: This Convention will now stand adjourned until 7 o'clock p. m. this evening.

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### WEDNESDAY EVENING, 7 P. M., DECEMBER 6, 1899.

The evening session was called to order at 7 p. m., in Jones' Opera House by the President, E. H. Cushman, who said:

Ladies and Gentlemen, you will now come to order and we will proceed with the regular program as laid down by our program committee. The first thing on the program tonight is the report of the Centennial Committee. I believe Mr. W. W. Farnsworth is chairman of that committee and I will therefore ask him to make a report.

W. W. Farnsworth: I believe that I was the chairman of that committee. I may say in the beginning that the committee has held no formally called meeting since its selection.

Last spring after the committee was appointed, Mr. Miller and myself were in Toledo, and while there we called upon the president of the local Commission. We found the Commission to be in hearty sympathy with our efforts and they were very glad to have our proposed help in the Centennial Exposition to be held there in 1902.

They were not in shape, however, at that time to take any definite action in regard to the matter, because they were engaged in looking after the financial condition of the Exposition. President Cushman and myself also went to see them afterwards. I wrote Mr. Harris asking that he be here at this meeting or send a representative that we might talk over the matter in regard to our part of the work.

I received a letter from D. J. Ryan, Director-General of the Exposition, stating that he will be here tomorrow. We have also received a letter from the chairman of the horticultural committee, Mr. Binkley, enclosing another letter asking us to submit plans in detail for the horticultural portion of the exposition.

That, I think, is all that we can report at this time. This commission has on its hands a large undertaking and it has been at work a comparatively short time. This time, too, has been devoted largely to the financing of the exposition. I might say that this exposition is to be held in a new part of the city and they are very desirous of making a permanent ornamental planting there. Mr. Moore is the superintendent of the parks in Toledo and I feel sure that the horticulturists will have a prominent part in the exposition. I feel that this is an opportunity for our society to make itself felt more than ever before

and I feel that we are in a position to accomplish something. They have been doing their best to prepare the grounds for this exposition by grading and filling. I understand they are about ready to begin active operations.

President Cushman: Gentlemen of the Convention, you have listened to the report of Mr. Farnsworth of the Centennial Committee. As you will observe, it is only a partial report. What disposition will you make of it?

N. H. Albaugh: I move, Mr. President, that we defer action on the report until we hear the report of the gentleman that is to be here tomorrow. I understand that a representative from the Centennial Commission will be with us tomorrow, and we can probably tell then better what action we will want to take.

Whereupon, by a vote of the Society, action on the report was postponed until a later session of the Society.

President Cushman: If you are through with the discussion with regard to the Centennial Committee, we will proceed with the regular work of the program. I have the pleasure of introducing Prof. A. D. Selby, who will make the report to the society on Vegetable Pathology.

Prof. Selby: Mr. President, Ladies and Gentlemen: For the presentation of this subject, this evening, we will attract your eyes. I have prepared a number of illustrations which will be thrown upon the screen and they will serve to illustrate the various points in my report as I proceed.

I trust you will choose your seats so that you may have a good view of the screen.

#### REPORT OF COMMITTEE ON VEGETABLE PATHOLOGY.—(Illustrated.)

By A. D. SELBY (Ohio Experiment Station, Wooster).

Plant diseases and, no less directly, the phenomena of healthy plants are the subjects upon which the committee is expected to be informed and required to make a report at the annual meeting.

Whether one would avoid and endeavor to ignore this subject or, accepting its difficulties, direct his efforts to its mastery, losses of greater or less amount will come to his notice. For the present the investigator of plant diseases is commonly able to render some assistance to the horticulturist; yet this aid can only be thoroughly effective when the plants in question have received at his hands such treatment as will otherwise develop them in normal and healthy growth. The first aim in successful fruit growing should be to maintain the plants under the most favorable circumstances—namely, to surround them by that set of conditions (always a very complex and intricate union) by which these plants or trees will be enabled to thrive best. These conditions will necessarily differ for the different kinds of fruits and vegetables. Experience has taught these differences as between plum and peach, cabbage and potato, etc. While the crop has been surrounded by the best conditions according to our knowledge, failure may still come. Extremes of weather conditions, or the inroads of plant diseases may still cancel our efforts. It is under these last



named circumstances that special study of diseased conditions may be helpful. In the light of present knowledge it is not clear that plant diseases may be altogether avoided, or that most of them may be escaped through a series of years. The chances of such attacks may be greatly reduced, in the first place by avoiding practices that breed diseases; for example, continuous cropping with the same plant, as in tobacco, potatoes, onions and the improper disposal of refuse. And in the second place the remedies, or more properly the preventatives, which recent advances in knowledge have given us, may be applied effectively at the proper time. There is progress in this science every year. The details of these matters are presented in the recent bulletins of the Experiment Station, and summarized in the spray calendar. A still more comprehensive manual is in preparation. I shall hope now to give a brief resume of the developments of the current year.

With the maladies of plants, as with their ordinary phases, any single factor may be unduly magnified. A set of conditions, a *melange*, so to speak, must always be reckoned with. While we may properly recognize the prominence of particular factors, or of a particular factor, for the time, there is often danger of extending this influence too generally. The life and growth conditions of the plants we cultivate, the soil status beneath them, the atmospheric conditions of heat and cold, moisture or rain, and its absence, dryness, the winds, the parasitic fungi and destructive insects, are a set of interacting agencies. There are still many lacks in our knowledge of the interrelations of these factors, and these wants must change with the years. I am well assured that one of the greatest obstacles to steady progress in dealing with plant diseases is the constant tendency to a one-sided or unconsciously biased view of these factors or causes, that give rise to disease. All sides should be canvassed and the canvass should be followed by *prompt action* of the required kind.

Weather conditions affect plant diseases and healthy plants as well, to a remarkable degree. Extremes of temperature and extremes of moisture (or its lack) exert a powerful influence. Last February's cold, the heat and drought of July and the rains of May contrast themselves. Aside from the physiological effects directly, these variations favor or retard parasitic fungi. Hot, moist weather facilitates fruit rots, and downy mildew of cucurbits. Cool, moist weather in April or May determines the development of the leaf-curl fungus (*Exoascus deformans* B.) and the parasite of apple scab (*Fusicladium dentriticum* Fckl.) as well. Drought checks the growth of fungi; the opposite effect is sometimes held as to the ravages of insects. Our friends in the western plains point with emphasis to their rather dry conditions. They have less of fungous diseases than we have.

#### THE SEASON OF 1899.

The season of 1899 has been one of contrasts — excessively low temperatures in February, the range being lower at the south (39°) than at the north (20°), hot weather in July, the finest fall for work enjoyed in recent years. Abundant, even excessive rainfall in May and early June, a lack of rain for later June and August and moderate precipitation for the fall months. As compared with the normal we have the following:—

## SUMMARY OF WEATHER CONDITIONS FOR 1899.

Month.	Temperature, Degrees Fahr.				Rainfall, Inches	
	Extremes		Mean		Mean or Average	
	1899 Lowest	1899 Highest	1899	Normal	1899	Normal
September .....	26	105	64.1	65.5	2.69	2.63
October .....	20††	94	57.4	52.5	2.14	2.08
January .....	-15†	66	27.8	28.9	3.01	3.00
February .....	-39‡	67	21.6	28.4	2.11	2.87
March .....	0	76	36.9	38.5	4.66	3.45
April .....	6	94	53.3	51.1	1.61	3.19
May .....	28§	96	63.3	60.9	4.32	3.63
June .....	36	102	71.5	70.3	2.96††	3.52
July .....	41	105	74.1	73.9	4.18	3.96
August .....	39¶	104	73.7	71.2	1.82	2.91

†—Garrettsville and Colebrook on 31st; ‡—Milligan, Perry county on 10th; §—Wooster 22nd; ||—Frost on 30th in Scioto marsh; ††—Up to June 19th rain generally abundant, after that locally deficient; ¶—Wooster on 11th; ‡‡—Wauseon 1st.

Compare this for April with 47.2° mean temperature in 1898 and a rainfall on 15 different days at the north — at the north in 1898 the rainfall was about twice that of this year in that region. The light rainfall and high temperature for April have assisted in the freedom from leaf curl of peach, the scourge of 1898 in the Lake orchards, while the abundant rainfall of May brought a vigorous development of apple scab. Deficient rains, with many cold nights, and probably other factors, left the pickle fields free from downy mildew till almost a month later than 1898. The dates of appearance were August 13 and September 9, respectively. Among the old fungous enemies, apple scab has been very conspicuous, sharing this prominence with local outbreaks of grape rot, onion smut and cabbage club-root. The conditions are therefore ripe for emphasis upon certain diseases that are rather more stealthy, but none the less injurious.

## INJURIES TO FRUIT TREES IN THE WINTER OF 1898-'99.

Abnormal or, as we usually speak of them, diseased conditions arise from severe cold with other attending conditions. Injuries of this character were very common in Ohio last winter. Nearly all of it seems to be traceable to the severe weather of February 8th to 14th, which appears to have been as extreme a period of winter as has been experienced since records were made for the state. The injured trees showed various effects. I have made observations upon peach trees chiefly and am less familiar with the damage to other trees. Here the effects range from the mere killing back of young shoots to the entire destruction of the tree. With trees in decline the injury was decided. Wind-exposed and badly drained spots showed most dead or damaged trees. A bleak point in the sloping orchards, a wet place anywhere, these were the locations marked by destruction. In one

case no protecting snow, in the other no protecting and ameliorating earth currents from the aerated soil below.

While it may not be known to all, it seems to be fully well established that death of fruit trees from cold, if we except the freezing on the north and northwest sides of the trunks, for which the causes are localized, is more often due to the same cause as death in drought. In other words, the trees, or parts, are killed by being deprived of water. If the soil is over wet and at once frozen, the transmission of water from roots to branches may be stopped or greatly impeded. The stems are then liable to injury. The same effect may result if the soil is exposed to the wind—the deeply frozen earth supplies the roots with no available moisture. A well-drained, well aerated soil, on the other hand, if not too dry, freezes slowly from above, and may continue to supply the tree with the required moisture for the excessive evaporation (transpiration) long after this supply is cut off, or greatly reduced for trees in less favored localities.

Mr. Miller and Professor Green can state for you their impressive illustrations of this difference. The exposed corner at Wooster has many dead peach trees; the wet depressions, or water-padded trees at Gypsum were killed to the line of separation between undrained and drained soil.

To avoid, or mitigate this injury, draining and mulching are both available. I am convinced that a straw mulch may exert a marked protection in winter. It is worth trying.

#### APPLE AND PEACH TROUBLES IN 1899.

The season has been one of trials for the apple grower, especially if he was not on the alert. The result shows the dollar and cent profits of spraying apple trees on a commercial scale. Let our friends from Lawrence, Delaware, Lucas and Ottawa counties bring this out. If the successful grower lives in some other county, he need not be silent.

May began with nineteen days of almost continual rainfall and closed with five more days of like character. The apple scab fungus took off the promising apple crop before some realized it. Unless spraying begins early and promptly, the crop is lost. The effects of this apple scab fungus are decisive. It determines very largely whether the apple will "hang on" or "drop off." Note the dark spots on the young apple. Do not be too sure that the rains have prevented pollination and remain inactive while scab captures the apple crop. Imperfect pollination of apples is overdone in current theory as compared with observed facts. I believe we can never impress this point too vividly. In the next place, the scab prevents the apples grown from being marketable. Further, apples spotted by scab and perforated by the codlin moth are very liable to rot during a warm fall, such as we have just experienced. Bitter rot is a plague to local growers of sweet apples. We need further light upon it. Whatever else may come and go the apple scab is still with Ohio growers.

The matter of crown gall of the apple is yet in an unsettled state. The trouble is recurrent and it is not clear where the crown gall may merge into root aphids. All such stock is good only for the brush pile. I also learned recently of a destructive root-rot of apple trees in Missouri. Have we the same?

#### APPLE CANKER AND CROWN DISEASE.

Apple orchardists are aware of other foes. Among these is the local blighting of the trunk, but more especially the branches of certain varieties. Baldwin, Duchess of Oldenburg and Grimes' Golden, with other varieties, have suffered seriously. First, a depressed area on the branch, next a dead one and then the branch is killed beyond. Finally the disease extends backward toward the trunk.

This has been called canker. In the King and with Grimes' Golden, as well as certain other varieties, the trunk dies at the base, usually at the crown and upon one side. Mr. Miller will tell you he had to take out all his King apple trees; Mr. Duer that his Grimes' seem doomed; and Mr. Wylie, that he would like to save several of his trees. Murrill, Cornell Experiment Station, has recently sent out a circular upon this last described trouble which he calls "The Crown Disease of the King Apple." Higher fungi (toadstools) are reported with this trouble on the King, appearing upon or in the earth near the diseased parts. Light will be welcomed on this serious malady. It is not clear to me that in some cases this injury at the crown may not be due to freezing. Can you help on this investigation?

Upon the apple canker I can report progress by others. Paddock, of New York Experiment Station, Geneva, has determined that certain phases of it are caused by the fungus of black rot in apple and quince (*Sphaeropsis malorum* Peck). Most of you are familiar with this form of trouble and give it the name of "sun-scald." Note the depressions, the dead spots, etc. There may be several causes working conjointly in these cases. The New York investigator has recommended early spraying, or whitewashing, so to speak, with strong Bordeaux mixture.

An increase in our knowledge of this canker may save many apple orchards. For this advance we may look with reasonable confidence.

The similar blighting or canker of pear trees is probably due to the pear blight microbe, as reported by Dr. Burrill some years ago. The pear blight, strictly so called, continues a most serious hindrance to pear culture. No new preventative is known for it. Cutting out and burning all diseased parts is recommended.

The crown gall of the pear is of continued importance. As with the apple, the gall affected trees should be burned.

The pear scab and pear leaf blight are usually abroad on leaf and fruit. An additional fungous disease of the pear, namely, pear leaf-spot (*Septoria piricola*) is rapidly becoming general in Ohio, as well as in New York, whence we have become informed by publications. This disease is not prevented by spraying with Bordeaux mixture in the work yet done. The damage from this fungus may not prove serious.

#### WINTER KILLING OF PEACH — YELLOWS.

February cold was a peach trouble of 1899. Unless situated in unusually wet or exposed places, peach trees were less injured than feared by many persons. Some growers followed foolish advice and cut off the trees at the ground. Nearly all thus treated died. Judicious late pruning gave best results. However much the cold may have been a blessing by destroying yellows, trees that were neglected by the owners, there is no concealing the fact that the cold of February destroyed many healthy peach trees. Losses from this source will often reach five per cent., and occasionally ten per cent., or even more, of the total number. A mulch may at times save such trees. To make mulching profitable will doubtless be difficult or even impossible.

I am unable to report upon yellows in 1899 from extended personal observations as I did last year. I fear, however, that too much vigilance is very rare. The rate of spread for yellows in '99 has not been studied. Possibly the destruction of affected trees by winter has checked the rate somewhat. In order to maintain profitable peach orchards the yellows may not be slighted in any manner. The diseased trees must be promptly burned. Some of the advanced studies of the year by Woods and Loew, of the division of Vegetable Pathology, U. S. Department of Agriculture, teach us that in certain cases, perhaps quite generally in variegated leaves, there are in the leaf, or its lighter colored parts, when the whole

is not involved, certain oxydizing organic bodies of complex nature, similar in certain respects to the diastase ferment extracted from barley sprouts. Indeed, these soluble ferments, as distinguished from the living ferments, such as fungi and bacteria, are present in both the healthy and whitish and the yellowish leaves, but the ferment (oxydase) in the healthy leaves does not discolor the chlorophyll, while in the unhealthy leaves, the yellowish or whitened ones, the ferment (peroxydase) does attack and break down the chlorophyll or leaf green of the leaf tissues. These peroxydases and oxydases are being studied and they promise us a revelation in our knowledge of plant life. It now seems possible that the secret of peach yellows may be exposed, but it would be rash to predict a less costly or more effective means of stamping out yellows when once established. If present hopes are realized we may be able, by controlling certain conditions of the trees, to ward off yellows, but these conditions are, as yet, unknown.

#### CROWN GALL, GUM-FLOW AND LEAF-CURL.

The Crown gall of the peach still destroys orchards and is yet sold in some instances with the nursery stock. Our photograph shows two such trees as delivered for planting. Nurserymen and peach growers alike should be ready to burn all this affected stock. The gum-flow disease is yet an unsolved problem for the vegetable pathologist. It is locally prevalent on the peach and plum.

Leaf curl of the peach developed to a very limited extent, even where destructive in 1897 and 1898. We have already referred this, whether correctly or not, to the warm, rather dry April. During the twenty days' rains which introduced us to May of 1899, we had a little scattering development of the disease. The position heretofore taken as to the effect of rains and cool weather on leaf curl development is still maintained. Other investigators hold almost the same view of it. One correspondent has suggested the possible effects of the cold weather in February. This possible effect was considered before the communication was received. Leaf curl was very abundant throughout Ohio in 1897, following winter weather which destroyed all the peach buds except in a small corner of Ashtabula county, while the cold of 1899 was not as severe over the whole state as in 1897.

The pustular spot of the peach is doubtless with us to stay. It greatly disfigures the fruit attacked by it.

#### DISEASES OF PLUMS AND CHERRIES.

These have not been unusual during 1899. The plum crop was light except of American varieties, etc. Plum rot was not prevalent, but rot of cherries was very common. All commercial growers will probably join me in declaring the rot of plums and cherries the most injurious and destructive disease of these fruits. Black-knot in no wise compares with the rot in the amount of loss caused. Leaf spot and shot-hole fungus are injurious if at all slighted in the spraying.

#### DISEASES OF SMALL FRUITS.

The amount of crown gall on raspberry plants, especially the red varieties, and upon blackberries, is certainly frightful. Healthy plantations are not always to be found, though diseased ones are common. We must bear in mind that apparently healthy raspberry plants, selected from a diseased plantation, will scarcely ever yield a healthy plantation. The man who has not a healthy plantation to select from should not offer raspberry or blackberry plants for sale.

There are other diseases of these plants, but none that promise to compare with crown gall in destructiveness.

## GRAPE ROTS AND VINEYARD TROUBLES.

Low prices have for some years made slight interest in grape diseases. Better prices and heavy losses by grape rot are met together in 1899. The usual forms of rot are again found, including black rot, bird's-eye rot or anthracnose, the rot caused by mildew fungus, and besides these what appears from imperfect study to be the white rot. It differs from the others in being very destructive after the grapes begin to ripen. We had it (white rot) on unsprayed grapes of several varieties at the Station, but scarcely any of it on the adjacent sprayed row, and none at all on rows removed from the unsprayed. Some, ordinarily successful grape growers, lost much of their crop even after spraying as usual. The grape regions of Ashtabula county and adjoining portions of Lake county, suffered some losses from this white rot, as I take it to be.

In no observed case where the spraying was well done according to the standards of our secretary, Mr. Miller, or Professor Green, was the rot very injurious. I am fearful that traction sprayers without direction of nozzles will not avail against this grape rot. I believe the spray must be directed. I would further suggest experimenting with winter applications of Bordeaux mixture. Spray at once if weather permits and again immediately after pruning, say in February. The usual applications should also be given later in vineyards badly affected by rot.

## ABOUT GARDEN AND TRUCK CROPS.

As already hinted when speaking of yellows, the present drift in the study of plant diseases is toward other causes than parasitism. The oxydizing enzymes which have now been studied in connection with the mosaic disease of tobacco, and which give us a hint of the secret of peach yellows, are being very closely investigated. It is, in this connection, a marked coincidence, if not more, that the year of 1899 brings us greatly increased knowledge of soil infesting parasitic fungi. Besides, the fusarium of the southern watermelon wilt, Dr. Smith has just shown us that the same organism attacks cotton and cow peas, and has discovered a similar disease affecting cabbage in New York. These soil infesting fungi attack the roots and finally plug the water passages of the plant, resulting commonly in sudden wilting and death. These diseases, which I may possibly describe as the *outgrowth of continuous growing of a single crop on the same land*, give us a most convincing reason for the rotation of crops. We have in brief this fusarium wilt disease of watermelons in the south, also on cotton and cowpeas in the same region; we also have a disease which is very similar on cucumbers and muskmelons in Ohio; there is also the fusarium disease of cabbage, just noted. *The fungi of all these survive in the soil.* Add to the formidable list the cabbage club-root fungus, and the onion smut, both of which thus continue in the soil for an undetermined period, and you have, gentlemen, some idea of the dangers which arise when the wholesome and reasonable law of crop rotation is disregarded. I would question the wisdom of bequeathing to the next generation soil loaded with soil-infecting species of parasitic fungi. The onion growers, the celery growers and cabbage growers of Ohio are ruthlessly violating this call for crop rotation. As they or others sow to the wind, so they may reap of the whirlwind.

## ONION SMUT AND CLUB-ROOT OF CABBAGE.

Onion smut is distinctively prevalent about Chillicothe in certain of the fields devoted to growing onion sets. The crop is reduced 25 to 40 per cent. and, as above stated, the fungus holds over in the soil when once infested. The best treatment

yet suggested is flowers of sulfur sown with the onion seed. For large onions transplanting is the remedy for loss.

Club-root of cabbage is rapidly spreading in cabbage districts. Liberal liming checks the disease, although the fungus is not destroyed. Rotation should aid in fighting the disease and mustard weeds must be watched. Speaking of mustard weeds brings to mind the success of spraying with copper sulfate to kill these weeds. Other crops, like wheat and oats, are not injured by the sulfate of copper solution.

#### CUCUMBER, MUSKMELON AND TOMATO TROUBLES.

There was much rain at time of early cucumber growth. The young plants accordingly developed a very limited root system, not enough, in fact, to carry them through the subsequent drought. I never before saw worse drying up and dying of otherwise healthy cucumber and muskmelon plants.

As stated earlier, the downy mildew (*Plasmopara Cubensis*) was late in appearing and did little damage. The anthracnose, on the other hand, was more prevalent than heretofore. It promises to continue a serious enemy of these crops in the earlier season. That anthracnose can be checked and controlled in the greenhouse we this year satisfied ourselves at the Pathologium of the Station.

Tomatoes continue to be attacked by the leaf spot fungus. In the greenhouse we had a farther outbreak of the point rot disease. It was checked by increasing the water supply and again increased by withholding water. This is in line with our previous experience with this trouble.

#### ASPARAGUS RUST — POTATO BLIGHT.

It is to be regretted that asparagus rust has appeared at Columbus, Wooster, Kirkwood and doubtless other places. It has also passed over Ohio into Indiana, Illinois and Michigan. Spraying has reduced the amount of rust about one-quarter in New Jersey. The yellowing of the late growth will be apparent when attacked, as will also the brown rust spots upon closer inspection. Fire should be used to destroy this stock of rust.

We hear a great deal about potato blight in 1899. My own confidence in good cultivation and spraying of potatoes remains unshaken.

#### IN GREENHOUSE, FIELD AND AMONG SHADE TREES, ETC.

Green house diseases have continued to abound, but time fails for their further treatment than given last year. Field crops have been intentionally omitted for lack of space. I wish that I might bring you something of a definite, helpful character to aid in preserving the shade trees which beautify our home grounds and adorn the public thoroughfares. Many complaints have reached me during the past midsummer. Beautiful trees have perished and others will do so. In general, the chief trouble appears to be in the chance for life given the average shade tree. I am convinced that we must get the shade trees from between the sidewalk and the paved street whenever possible, and failing in this to supply the life-giving water as necessary. Further, trees ripen and die when reasonable stress has been endured. The shade trees require to be changed until we possess a better selected, longer lived, better planted and more healthy set of them than now marks the transition from newness to stability, from dirt roads to paved roadways.

In closing, I beg to remind you that the year 1899 promises to pass into history as one of the most memorable in its relation to the problems of disease of plants. Your leniency in judging this imperfect paper is greatly desired by the committee.

Member: I would like to ask in regard to the injury of the trees in severe cold weather.

Prof. Selby: If the soil is frozen suddenly, the transmission of water from the roots to the branches, is greatly impeded. Such extremes are liable to injure the tree. We have the same effect if the soil is exposed to the wind. Deeply frozen earth supplies no available moisture. Where the trees are in a wet place, the excess of water causes the ground to freeze quickly and is liable to destroy the trees.

Member: I would like to ask about the pear leaf spots.

Prof. Selby: They are small light-colored angular spots and differ from any others and they are somewhat destructive too.

Member: Explain more fully in regard to the gum flow.

Prof. Selby: Gum flow is a disease which causes a flow of gum from the trunk and branches. It shows a browning in spots either externally or internally. The cause and the remedy for this disease are yet imperfectly understood.

Member: What do you do for the leaf curl?

Prof. Selby: This can be handled best by spraying and should be commenced before the blossoms open. I would advise the use of Bordeaux mixture. For early spraying I would recommend 4 lbs. copper sulfate and 4 lbs. of lime in 50 gallons of water. In the picture shown you see the arrangement for filling the tank. It is filled by a double line of hose. The one line works with the lime and the other is seen conducting the water into the tank.

Member: Is the bird's eye rot on the grape the same as the white rot on the Catawba?

Prof. Selby: The white rot affects the whole grape, but if it affects only one part it would be anthracnose or birds eye rot, which affects only one part.

Member: How long will the fungus of water-melon live in the soil?

Prof. Selby: I am unable to state, but similar fungous diseases in cabbage have survived for three years.

Member: I would like to ask in regard to rotation in crops, whether putting in rye or corn or tomatoes, and then again sowing to melons would be sufficient.

Prof. Selby: It is not known but it is unlikely that it would be sufficient if you had the true soil disease.

Member: Can you give us the origin of the asparagus rust and the remedy?

Prof. Selby: The asparagus rust was introduced into the Eastern United States from Europe and it is gradually passing westward.

Mr. Sweet: Mr. President: I move you that we tender a hearty vote of thanks to Prof. Selby for the very instructive address delivered to us tonight and for the pleasing and effective manner in which it was presented by him.



Wherefore a vote of thanks was tendered by the society to Prof. Selby for his address.

Mr. Montgomery. I would like to ask about the mildew on the melon and what time it usually begins.

Prof. Selby: I did not meet with any mildew on the melons this year. Nearly all of our melons died before the mildew got around. The transfer from wet to dry caused an imperfect root system. I did not have any mildew. I think spraying would be good. I should begin spraying for melons when they begin to vine and certainly as early as the middle of July. I have known mildew to appear before August 13. I should say about the middle of July and the sprayings should be not more than 8 or 9 days apart.

Member: How many sprayings would you make?

Prof. Selby: Something like 6 or 7 sprayings with Bordeaux mixture. I would use 4 lbs. of copper sulfate and 4 lbs. of lime in 50 gallons of water.

Mr. Earhart. I raised musk-melons last year and some of them were planted early, I put manure on part and the vines began to rust there. On part of the patch I hoed it over and they did not rust at all. The others died and I thought the manure started that rust. I have had some experience with water-melons. The melons looked green in the morning but before night they were wilted. I pulled them up and found a worm on them.

Prof. Selby: Was there sod around the border?

Mr. Earhart: Yes, sir.

Prof. Selby: I would take it that it was in the earlier planted melons that you had the trouble?

Mr. Earhart: Yes, sir.

Prof. Selby: You found the rust more pronounced in these plants, did you?

Mr. Earhart: Yes, sir.

Prof. Selby: We found that same thing to be true in Wooster. We never found any fungus in them.

President Cushman: We should like to continue this discussion much longer, but the hour is growing late and we are not yet done with the regular program. I will therefore by your permission pass to the next number. I have the pleasure this evening of introducing to you Dr. Georgia Merriman, of Bucyrus, who will address us on the "Dietetic Value of Fruits."

Dr. Merriman: Mr. President and gentlemen of the Ohio Horticultural Society: Doubtless my predecessors in this convention have made you perfectly familiar with fruit culture from the first seedling to the oldest tree in the orchard. They have no doubt told you about the pruning of trees and how to graft them and how to pack the fruit for market, but they have left it to me to tell you about the physical need

of corporate man and the effects of the consumption of fruit upon the human body. I will endeavor to do this under the title of the "Dietetic Value of Fruit."

DR. GEORGIA MERRIMAN (Bucyrus, Ohio).

Doubtless my predecessors in this convention have made you perfectly familiar with the processes of fruit culture, from the planting of the first seedling to the yield from the oldest tree in the orchard. They have advised on the soil to select, the fertilizer to procure, how to prune and how to graft the tree, how to pick its abundant fruit, how to pack it for market and how to get it to the consumer; but it has been left to me to show what physical need it met by its consumption as an article of diet under the title of "The Dietetic Value of Fruits."

### THE DIETETIC VALUE OF FRUITS.

Notwithstanding the various conflicting theories elucidated by physicians and hygienists upon the effect of acids in the system, uninstructed human nature manifests an instructive appreciation of the value of malic acid in the small boy's willingness to take his in an immature state; but whether the forbidden fruit be ripe or green, certain it is that for the fruit grower some other scare-crow than 'abdominal colic' must be painted on his signboard in order to secure his fruit. Let us hope that a consideration of the chemical changes taking place in the growing pomum or pome may reduce this same small boy's capacity for green fruit and increase his desire for it after the sun's rays have developed its sugar and thus rendered it fit for human consumption.

The chemical analysis of fruits of all varieties differ more largely in the per cent. of fluid proteins (or tissue builders) and the nutritive substances, which include fats and carbohydrates, or heat producers, than in other quantities; unless it be in amounts of various ethers which give them their special aromas or the pectins which are the jelly substances and are closely allied to gelatinoids in the vegetable kingdom.

When we remember that water composes three-fourths of the earth's surface, 90 per cent. of the vegetable kingdom and seven-ninths of the human body, it is easy to concede that most of the civilized races completely underestimate the quantities of fluids to be supplied from external sources, and for this reason hygienists advocate the use of fruit *ad libitum*. It cannot be questioned that liquids supplied by fruits that are rendered antiseptic or germ destroying by the acids they contain are therefore a good source of water supply to the different tissues of the body. The diurnal needs of water are variously estimated at from three to six pints.

As the health of the body lies in the composition and circulation of its life-giving fluid, fruits aiding and abetting both quality and quantity of the column of blood and its fluidity must stand first in utility in hygienic living.

The acidity of the fruit juices adds much to their digestive power and are intermingled in different varieties. Citric acid is the peculiar acid to which limes and lemons owe their sourness. It is present also in the juice of other fruits, such as the cranberry, the red whortleberry, the berry of the bitter-sweet, the red gooseberry, the currant, the strawberry, the raspberry, the tamarind and the red elderberry: the latter contains citric acid so abundantly that a French chemist proposes it as a source of the acid for commercial uses.

Fruit acids perform two functions in the process of digestion: they attack the protein solids and aid in the rapid passage of fats to the intestines where emulsion of fats takes place, and when the latter action is nullified by too great reduction in strength of acid, it is supposed, but not proven, that the fruit's special aroma

produced by the presence of compound ethers may add their power to complete the digestion: these hypotheses are based upon the well-known fact in the laboratory that ether will dissolve many substances insoluble in water or alcohol. The odor of the apple is said to be from amyl valerate and ethyl nitrite; that of quince, from ethyl selargonate, and that of peaches from nitro benzoin and benzoic aldehyde.

It is likely that these complex volatile bodies change from season to season, as we know the flavor of fruits varies from season to season from different causes, principally, however, from the amount of sunshine.

To show that eating habits should be corrected at an early stage of man's mortal existence and are largely a question of association—just try ordering nitrobenzoin and benzoic aldehyde for dessert and see what a domestic explosion will follow. Rebellion would surely be inaugurated. The little three-year-old girl who, when asked by her devout father to give thanks for the breakfast, said, "I don't know how, I don't see anything I like," and then, suddenly dropping her head and folding her hands, said, "I thank thee, Father in heaven, for the peaches and cream we had last night"—would likely have many followers in her predilection for peaches and cream.

The per cent. of water in six varieties of strawberry varied from 91.8 to 93.3; in black raspberry from 79.5 to 93.9, and in red from 72.7 to 83.5; in currants, from 84 to 85. Cherries, currants, gooseberries and red raspberries stand first as water suppliers to the system. Strawberries furnish from 52 to 84 per cent. of protein or tissue building material with an average per cent. of .61. The raspberry average per cent. of protein of 1.56, while all nutritive matter, which includes the proteins, amounts in strawberry to 6 per cent., and in the raspberry to about 10 per cent. The nutritive value of the raspberry over the strawberry is 4 per cent.

The fact that all fruit acids aid in the digestion of the tissue-builders is an important one, whether they do it by dissolving the proteids or, as believed by some authorities, by changing into alkaline carbonates in the presence of gastric juice and thus entering the blood as alkaline substances—they render substantial aid in the tissue-building labor of the blood itself. Their comparative value in this capacity may be seen from the following table:

Bananas yield one and three-tenths per cent. of protein.  
 Grapes yield one and three-tenths per cent. of protein.  
 Apricots yield one and one-tenth per cent. of protein.  
 Figs and Currants yield one and five-tenths per cent. of protein.  
 Blackberries yield one and three-tenths per cent. of protein.  
 Raspberries yield one per cent. of protein.  
 Cherries yield one per cent. of protein.

Thus you will see that as chemical adjustants to nutrition the banana stands highest, the grape second, and the apricot third.

Green fruit contains a large amount of starch in the process of ripening, which is simply slow cooking with the sun's rays as fuel. This starch is converted into dextrin and then into sugar as in the process of digestion; so that in the use of fruit the starch is taken in a partially or completely digested state, which accounts for the easy digestibility of this kind of food.

But often by forming unscientific compounds, and by this I mean compounds not easily separated into their original elements or changed into substances which are readily dissolved or emulsified by contact with the gastric and intestinal juices we render digestion difficult and sometimes impossible. Several good combinations should be remembered by every one. Fruits and grains; grains, sweet

fruits and milk. If the acid of the fruit be too strong there is danger of forming with the milk a curd not readily digested. Fruits and vegetables should not be eaten together, because of different time required for digestion.

Civilized man is still indulging in such wonderful acrobatic feats of digestion that insulted nature sometimes calls a halt, by utterly refusing to work the lead horse of physical energy, the stomach, and demands a digestive vacation. The doctor is usually summoned at this stage and, after many fruitless efforts to medicate nature into a good humor, sends his patient off to southern France or Germany to the Grape Cures, where he is placed in a thoroughly saturated grape atmosphere; he eats grapes and nothing else; he drinks unfermented grape juice and nothing else; he doses in a hammock swung in a grape arbor and dreams of grape culture;—and for all of this he pays a small fortune, getting in return for his six weeks' abstinence the ability to digest various other articles of diet the remainder of the year. I believe in the grape cure, but would administer the medicine in a more rational and less expensive way. Why not make a grape-cure in your own dooryard or on a neighboring hillside? The dose should also be changed to a diurnal one. It is my candid opinion that every family should be supplied with fruit juices prepared after following recipe, to last from one season to another and in quantity to give each member at least one pint of juice or its equivalent in fresh fruit for every day of the year.

The fruit should be washed and crushed, the pure juice thus obtained brought to boiling point after sugar has been added in proportion of one part to five of juice and sealed in wine or beer bottles, or a new bottle may soon be invented with less painful associations, which can appear on every dinner table. Much digestive obstruction can be obviated by the regular administration of fixed amounts of fruit juices and this hygienic habit has been rendered quite feasible by the home-growing fruit interests and by the constantly increasing methods of transportation:—it has been calculated that our new, friendly neighbor, the Cuban, could land ripe oranges in a San Francisco while California oranges were still green, if the great interoceanic canal were open to traffic to-day.

The pulp of most of the pome-fruits is easily digested and valuable but the seeds of all fruits were intended for reproductive purposes, and not for food; they belong to refuse material and should be discarded by the modern hygienist.

We are inclined to think that our methods of preserving fruits are better than those of earlier years. To show that our claim is not undisputed I quote one Amaziah Dukes, of New York, who claims to have eaten the following bill of fare just after certain important excavations had been made near the site of ancient Pompeii. He says:

"At that dinner I ate apples that ripened more than eighteen hundred years ago; bread made from wheat grown before the children of Israel passed through the Red Sea, and spread with butter that was made when Elizabeth was queen of England; and I washed down the repast with wine that was old when Columbus was playing with the boys of Genoa.

"The apples were from an earthen jar taken from the ruins of Pompeii. The wheat was taken from a chamber in one of the pyramids; the butter from a stone shelf in an old well in Scotland, where for several centuries it had lain in an earthen crock in icy water; and the wine was recovered from an old vault in the city of Corinth.

"There were six guests at the table, and each had a mouthful of the bread and a teaspoonful of the wine, but was permitted to help himself bountifully to the butter, there being several pounds of it. The apple-jar held about two-thirds of a gallon. The fruit was sweet and as finely flavored as if it had been put up yesterday."—*Youth's Companion*.

The American people consume more meat per capita than other nations and must add acid fruits or strong alkalies to accomplish the disintegration of the fibre cell-wall or else we will have underfed tissues with overloaded stomachs. Although to secure the painless and rapid digestion of food nature intended, simplicity in construction is necessary, some combinations of food are more readily broken up into their constructive elements than others; these should be early grafted on the child's store of useful knowledge; for with Mrs. Kellogg we believe that "Children allowed to eat at all times, to overeat, to eat without need and, simply because they enjoy the taste, being thus taught self-gratification rather than self-control, are thereby placed in strong bonds under the dominion of their lower natures. Is it to be expected that the child who through years of wrong education has been in bondage to appetite will be able to arise and shake off the shackles, and keep under the body and bring it into subjection when the years of youth and maturity are reached?"

"These facts emphasize the mother's responsibility and privilege, whose duty it is to intercept temptation and build up bulwarks against evil by the establishment of correct habits of eating and drinking controlled by the real needs of life." The recent introduction of nut food products has robbed the squirrel of his corner on nuts and every humanitarian should plant nut trees to complement his abundance of fruit with its best combining element. Indeed, nuts seem threatening the whole earth's oleaginous products. No more toothsome combination can be imagined than an almond and a raisin together.

Some extremists even insist that to spread a fruit-sauce on your bread is unscientific; but I opine that young America will hardly give up his apple-buttered bread until *in extremis*.

Having briefly considered the different methods by which an abundant supply of fruit can affect the *prima via* let us look for a few moments at some of the methods invented by man for its preservation and some of the more recent discoveries in regard to its successful combination with both organic and inorganic food products.

The self-sealing fruit jar, in my opinion, leads the van of numerous experiments to keep from the fruit, germ-laden air, whose millions of inhabitants quickly make terrible inroads upon perfectly ripe fruit and all fruit exposed for sale in the open air should be washed in boiled water before its external covering should enter the human stomach; this being the exceptional case where only skin deep is quite sufficient for serious consequences.

There has been much controversy in some quarters over the dietetic value of dried fruits compared with fresh samples or canned fruits. While we heartily concur in the approval of what we consider cleaner and better methods of preservation than drying fruit in the open air, evaporated fruits are popular, toothsome and digestible if properly prepared for the table, and we admit that experiment station experts quote "fresh apple at .4 per cent. of protein per pound, and dried apple at 1.6 per cent.", thus we must concede that either the protein is increased by exposure to nature's drier, the sunshine, or that condensation increases the ration of protein per pound.

The still older methods of preserving fruits in their own and often in other juices is fast becoming obsolete and is best conserving human interests by dying out entirely. And here let me say that the unthinking multitude is often misled by the physician. Some physicians, knowing that the ultimate use in the body of a large proportion of our foods, especially cereal foods, is in the form of sugar, unhesitatingly declare that children should have it *ad libitum*, forgetting that to do its work in the place assigned it in the human economy, it must never be given on an empty stomach or in too concentrated form or its digestion is retarded and other foods, surrounded by molasses instead of sweetened water, will

remain in the stomach unaffected by the gastric juice until enraged nature telegraphs to the citadel "Reverse the pumps," and reversed peristaltic action brings up the offending *cane*. In the sugar-growing countries they feed their little innocents on the green stalk of the sugar-cane and send to the more cultivated races refined sugar with which they destroy their progeny. Fruit juices in natural state of saccharinity combined with nuts in their best state of maturity taken with a proper amount of properly cooked cereal foods formed an ideal diet for our first parents; but whether their descendants will ever willingly return to so simple a menu is still an open question.

Viewing the stomach as only the chemical retort of the body, it would seem wise to employ such laboratory devices as heat and etherization to secure the dissolution of substances placed therein. Whether they be of organic or inorganic origin, the amount of the former necessary must primarily depend upon the quantity or quality of fruit juice ingested; therefore, turning this wheel of digestion any way you like a *spoke if not many of them* will always be fruit of some kind.

The banana, standing first as a tissue-builder, is not as readily digested in our state as many other fruits, because it comes to us in the green state and artificial methods of ripening fruit, like many other of man's attempts to imitate nature, falls very far short of even a good imitation. Hence the digestibility of the banana is increased by slicing in other fruit juices, the lemon, perhaps, being the most popular and delicious.

The old-fashioned apple-butter could easily be supplanted and a digestive gain made; especially if the ingredients were revealed, as in the following dialogue, which is well vouched for, as occurring about fifty years ago and not two hundred miles from this spot. "Would you like to buy some apple-butter?" said the country woman to the corner grocer, who was then also a department store-keeper. "Why, yes," said he, "Mrs. T., is it good apple-butter?" "Yes," she replied, with much composure; "it is very good pumpkin apple-butter." A marmalade made of juice and pulp of 12 oranges and two lemons and half their weight of sugar might run even good cider apple-butter out of the market. Although the protein value of the apple is low its digestive and palative virtues are high.

The aroma of fruits, as well as their beautiful contour, attracts the attention of artists and children, and thus leads to their ultimate consumption.

In this day of electrical explanation for all of nature's phenomena, when we are said to sleep only in electrical equilibrium, to receive heat, light and galvanism from the electric æther wave, to obtain much mechanical force from electrical dynamos, and are even in danger of becoming magnetized into silver-plated machines, it may be well to ask what dynamic value fruits may possess when taken into the physical man.

We have heretofore spoken of fruit juices as acids: let us now seek a good definition of an acid.

Acids are compounds which are capable of uniting in definite proportions with alkalies, earths and ordinary metallic oxides, with the effect of producing a combination in which the properties of its constituents are mutually destroyed; these combinations are neutral and are called salts. Another, and probably more correct, definition is: acids are compounds having a strong, electro-negative energy and therefore possessing a powerful affinity for electro-positive compounds such as earths, alkalies and ordinary oxides. It is this antagonism in the electrical condition of these two great classes of chemical compounds that gives rise to their mutual affinity, which is stronger as the contrast is greater—usually the acid is an oxydized body—vegetable acids contain both oxygen and hydrogen—therefore, it is no stretch of the imagination to affirm that fruits give to digestion a dynamic force to be derived from no other class of foods in so large a

quantity or at so early a stage of its exhibition. Fruit is nature's diuretic and infinitely pleasanter to take and more efficacious than any patent or proprietary medicine ever concocted.

From a botanical sense all nuts are fruits, yet their extensive use as foods has heretofore been relegated to nomadic races; but recently fashion's dictum has ordered a change, and lo! peanut butter, cocoanut butter and almond butter are spread upon wafers and crackers served at fashionable functions! For once the scientist and the "four hundred" may co-operate with good results to mankind in general.

The protein value of several kinds of nuts is quoted:

Peanut butter ....29.3 per cent. of protein to the pound.				
Peanuts ..	.....25.8	"	"	"
Hickory nuts ..	....15.4	"	"	"
Pecans ..	.....11.0	"	"	"
Pistachios ..	....22.8	"	"	"
Walnuts ..	....27.6	"	"	"
Filberts ..	....15.6	"	"	"
Almonds ..	....21.0	"	"	"
Brazil nuts ..	....17.0	"	"	"
Chestnuts ..	....10.7	"	"	"
Cocoanuts ..	... 6.3	"	"	"
Biotes or acorns.	8.1	"	"	"
Butternuts ..	....27.9	"	"	"

of edible portion.

Story of Armour and School children. No. reduced from 60 to 10.

The protein or tissue-building value you have seen, but a dietetic obstacle to their general use is the difficulty of mastication. After they enter the stomach in proper subdivision they are quickly and easily assimilated. The nut mill now on the market renders them, in form of butter, a most nutritive as well as palatable article of diet. From these nut-butters can be made an excellent substitute for milk, by the addition of tepid water slowly incorporated, drop by drop, until the desired consistency is reached. The growth of nut trees and the use of their products as food should be encouraged.

To a large majority of receptive humanity the blossom seems to be the acme of success in the Lord's decorative plan of creation; but to the philosopher and practical enthusiast the fruit crowns in beauty and usefulness the vegetable kingdom.

Mr. Sweet: I would like to ask the Doctor about the red alderberry. I am told they are poison. The red alderberry comes out in the spring.

Dr. Merriman: Have you had any experience with it?

Mr. Sweet: No, because it has been said to be poison and I am afraid of it.

Mr. Moore: Can you use the pokeberry?

Dr. Merriman: I should not advise its use, I think.

Mr. Moore. I have known it to be used, and the birds eat it.

Dr. Merriman: I have have known birds to eat many things I would not recommend for people's use.

L. B. Pierce: Why do you say not to eat fruit and vegetables together?

Dr. Merriman: Because of the difference in the time of their digestion.

L. B. Pierce: Then hotel dinners are contrary to nature?

Dr. Merriman: Mr. President, am I a prisoner at the bar? (Laughter). I think we make a mistake by mixing our food.

Mr. Moore: I eat cakes and drink cider and then crack walnuts and eat them.

Dr. Merriman: I think fruit and vegetables taken together require too much time for their digestion. I think they should not be combined. They may be healthful food when separately used, but they should not be eaten together. Fruits and meats are a good combination, but not fruits and vegetables.

Mr. Shirer: Suppose you would take fresh pork.

Dr. Merriman: I think no form of pork will digest under four hours. The combination of fruits and meats I say nothing against, but I do not like the combination of fruits and vegetables.

N. H. Albaugh: A friend of mine is troubled with insomnia and he makes it a rule two hours before retiring to eat apples, and he claims that by doing this he is able to sleep soundly and that if he omits the eating of the apples his sleep is disturbed. Is there any truth in this or is it only imagination?

Dr. Merriman: Whether apples are better than any other fruit I am not prepared to say, but they are a good diet. Persons who use their brains constantly are apt to have all the blood in the head, so it is a good idea to put something into the stomach to call the blood from the head. It should be something that is easily digested. Just as soon as the blood is drawn from the head they will go to sleep.

L. B. Pierce: How would it do to eat mince pies, as they require more blood to digest them than anything else you could take?

Dr. Merriman: I yield the point to the gentleman, if that is his practice, for he looks well nourished.

Mr. Ohmer: I move you, Mr. President, that this society extend a vote of thanks to Dr. Merriman for her very entertaining and instructive address.

Whereupon, the society extended a vote of thanks to Dr. Merriman.

Mr. Albaugh: It is now 20 minutes past ten o'clock, and I move that we adjourn until tomorrow morning.

President Cushman: I wish to say before putting this motion that the entertainment committee desires me to state that if there should be any delegates who desire accommodations other than the hotel, they can supply it. We have good private boarding houses at \$1.00 per day.

The society then adjourned until Thursday morning.



## THURSDAY MORNING SESSION, DECEMBER 7, 1899.

## AD INTERIM REPORT.

W. W. FARNSWORTH.

The past season has been one rich in experience, if not in dollars.

The first notable event was the visit of the polar wave in February, which froze the roots of thousands of trees in the country.

The ground was bare in the northern portion of the state and we witnessed the very unusual sight of seeing peach and plum trees bring forth abundant bloom and foliage and then die for lack of live roots.

The fact that where the ground was covered with grass, weeds or any kind of rubbish, the trees were not injured, caused many to draw the erroneous and misleading conclusion that grass and weeds were better than clean culture.

I lost only about fifty peach trees in my orchard of eighteen hundred, while many of my neighbors lost fifty to seventy-five per cent. of their trees.

My comparative immunity from loss, I attribute mainly to my method of culture, viz: Clean and thorough culture the first part of the season and in mid-summer drilling in Cow Peas, Rape or Canada Field Peas to check excessive late growth and afford protection, humus and fertility to the soil.

This year, for the first time in my recollection, our unmulched strawberry beds were seriously damaged and yielded the poorest crop I have ever yet gathered.

Cherries came next and were satisfactory, both as to yield and price. Early Richmond and Montmorency are my favorites. Dyehouse produces well but comes on when market is full of strawberries.

Currants were a good crop and prices somewhat better than the very low prices of the past few years. Victoria is still my favorite, although President Wilder is very promising.

The Raspberry crop in our section was a moderate one. My own was fully up to the average.

Eureka came up to its usual high standard of yield and profit.

Conrath is fairly productive of firm fruit.

Lotta was the only variety injured by winter and only bore a partial crop.

Munger succeeded finely and I am largely increasing my average of it. It may be called an improved Gregg.

The finest thing I had or ever saw in the line of black raspberries was my patch of Cumberland Raspberries. The berries are large, jet black, very uniform in size and shape and the richest in flavor of any I ever tasted. It is an excellent shipper and a strong, healthy, hardy cane.

In the reds, Loudon and King were not injured in the least by the winter. Millers early slightly and Cuthbert severely injured.

King was the first to ripen and again proved itself truly the "King" of the early reds.

Loudon is plainly the late best red.

Minnewaski blackberries badly winter killed.

Eldorado proves to be my best blackberry.

My Peach crop was quite satisfactory.

The Crosby required thinning. Oldmixon yielded a full crop. Kalamazoo half crop and Elberta nearly as much. Other varieties scattering, prices satisfactory to the grower.

Bartlett's, Kieffer's, Howell's, Anjou and Lawrence bore a full crop and sold it at good prices.

The Apple crop will bear considerable study.

The yield was good in quantity but quite wormy, and the long season, high winds and warm October made the amount of sound hard winter apples very small by December 1st.

In buying, packing and shipping the fruit of over one hundred orchards in four counties, I found the largest, handsomest fruit on sandy soil, well fertilized and cultivated. But I found that where orchards were not sprayed, the fruit on pastured orchards was freer from worms than where cultivated.

The ideal management must combine cultivation, spraying and destroying fallen fruit by stock or otherwise.

One of the great needs of Ohio apple-growers is an apple similar to the Baldwin, but later in maturing and more regular in bearing. Possibly we may secure this from the southwest.

Wherever I found an orchard that had been well sprayed, I found superior fruit, especially when it had been cultivated and hogs or sheep had run in it.

I also found that the fruit from young, vigorous orchards kept better than that from older or unhealthy ones.

In the extreme northeastern portion of our county, some twenty miles from me, are several serious outbreaks of San Jose scale, several orchards being completely ruined.

The owners of surrounding orchards are demanding compulsory, concerted action to suppress it.

Mr. W. W. Farnsworth: I desire to say that my experience has been that where we can sow cow peas in June it is preferable. These should be drilled two feet apart so that you are able to cultivate between them. The best method is cultivation throughout the season. In order to cover the bare ground in winter, we grew a cover crop. For later use we may now sow Rape, but that does not add as much fertility to the soil as the cow peas. I used it among my currants this year for the first time, and am pleased with it.

### CHERRIES.

We have never been able to realize from the Dye House as much as we have from the Montmorenci and the Early Richmond. Of currants there were good crops and the prices of this year were better than the low prices of last year. I have the Wilder and the Pomona and I am inclined to think that both are promising. The Eureka was very productive last year, but the Lotta was very much injured by the winter. We found the Crosby very hardy in bud, but tender in root.

Prof. Selby: Was there any difference in location with respect to drainage?.

Mr. Farnsworth: We found where the most exposure was, that is on the outer edges, that there the plants suffered most. Many orchardists sprayed their fruit trees and they found live buds in abundance, but later the trees died outright.

N. H. Albaugh: Which is the earlier, the Kalamazoo or the Elberta?

W. W. Farnsworth: The Elberta is the earlier of the two varieties.

N. H. Albaugh: I sent 2,000 trees to Georgia the other day to be

planted. I thought the Elberta was the earlier peach, and I had this in mind when I made the consignment of trees.

Prof. Selby: Among the many things to be considered in fruit raising is the one relating to a temporary mulch. I asked the question of Mr. Farnsworth because I was not quite clear as to the location of his plants. I wanted to know whether the roots froze or whether they perished from other causes. In a soil where it is frozen suddenly, the supply of available moisture is shut off from the plants. I suggested last night the idea of mulching so as to prevent too late a growth.

W. W. Farnsworth: I think a practical way to mulch is to grow the mulch there by cultivation of some of these crops. I had a practical illustration of the value of protection last year. I have a row of Niagara plums composed of seventy-two trees. Half the distance of the row is exposed, but for the other half there is a rail fence, perhaps twelve feet away from the trees. As far as the fence extended the trees were protected. (We had no snow on the ground during that cold period.) This fence broke the force of the western winds and afforded enough protection to save the trees. I have not the slightest doubt but what the damage to the trees last year was caused by the severe freezing. It seems to me that it is a clear case of damage by freezing, as the upper roots were dead, and the lower ones uninjured.

L. B. Pierce: I want to say that we have often had winters in which the ground was frozen three feet deep. It did not freeze as deep last winter as it has in other years.

W. G. Farnsworth: I am inclined to say that the damage last year was caused by the sudden freezing. There might have been other conditions in other years which we do not know of. I think Prof. Selby has answered this question of tree damage correctly, when he says that it came so suddenly. It came almost in one day and it practically shut off all the circulation at once. I think that to this fact more than to anything else is due the damage of last year.

Mr. Carr: I want to say a word in regard to mulching. It is sometimes not necessary to put a mulching on the ground. We have tried the experiment of sowing oats later in the season. We found it a good plan, as they stand a great deal of frost. I think oats are a good crop. At our place we suffered very much from leaf curl. We lost a great many trees and they had suffered mostly from leaf curl.

Mr. Farnsworth: I am trying oats also in currants. I have tried Rape and Canada field peas. I would prefer Rape. You can sow it in September and it can be sown in rows. You can cultivate your ground until the middle of September and then you can grow a full crop of Rape. It does not add much fertility to the soil. You can cultivate a crop in your orchard until the first of August and also grow a crop of peas.

Mr. Montgomery: Provided of course that the frosts do not come too early.

Mr. Farnsworth: I mean to sow the peas about the first of July, abandon cultivation about the middle of August or the first of September. By doing this we can get a good covering for winter.

Member: How about cow peas for a covering?

Mr. Farnsworth: Cow peas are killed as early as corn. They do not make as rank a growth as the Rape. It grows quickly and perishes quickly.

L. Br. Pierce: Generally the Rape goes to pieces in the cold weather. There is not much left of it in the Spring. Is there enough left of the Rape in March to do any good?

Mr. Farnsworth: Yes, sir, I think so.

C. B. Pierce: Do you leave the cow peas on the ground during the winter?

Mr. Farnsworth: Yes, sir. I plowed under five acres this fall and I will let the rest remain on top this winter.

N. H. Albaugh: Is that the Southern Cow Pea you are speaking about?

Mr. Farnsworth: Yes, sir.

Mr. Albaugh: This one that I have reference to is a great fertilizer in the South. We put it in during the month of June and we let them go maturity. Then we feed them to our mules. I wondered whether it was the same pea we have in the north. In regard to the statement made by Mr. Pierce that the ground had often been frozen deeper than last winter and yet the fruit and trees were less injured—reminds me of the Irishman, Patrick, who was explaining his fall and he said, "Shure the fall did not hurt me a bit, but it was the sudden striking of the ground that hurt me." It appears from the evidence produced here that it is the thawing and not the freezing that hurts.

Mr. Aultfather: I find it is a good plan to sow corn, and let it get two or three feet high, and let it lay on the ground.

N. H. Albaugh: How many of us would let it lay?

Prof. Green: I have heard nothing about the Soy bean. It seems to me to be superior to the cow pea. I think it is decidedly superior to any variety of the cow pea.

Mr. Sweet: It seems to me that it makes very little difference what you put on, if you only have a crop. I think there is nothing so nice as a good crop of Crimson clover. I find nothing better than this.

President Cushman: Does it die a natural death?

Mr. Sweet: No, I plow it under. That is my way of doing it.

Mr. Earhart: If I understand it, the land of Mr. Farnsworth is level, but how are we going to cultivate on high land? We can not do the same on hilly land that he can do on level land. My experience in cultivating my orchards has been this: I sow clover and I mow it in

the summer. I find it good to stop any places that have a tendency to wash. One place on the top of the hill I put five loads of clover chaff. I stopped all the places that were beginning to wash and I got a good set of clover on it. The land was more productive and richer than it was before. That mulch is all over the orchard. Speaking about the freezing of trees last winter, I want to say that I find my orchard dotted all over with trees that died. I dug some of them up, and I found no roots injured but the tops were killed. In many cases the body and tops of the trees died and sprouts came up from the roots of the tree. A great many of the limbs were frozen. Young trees stood the winter better than the old ones. It is all very well to talk about your cultivation for level land, but what shall we do on the hill? If we cultivate, our land will wash and we lose the soil, so that whatever we might gain one way we lose in another.

Mr. Farnsworth: In regard to the Soy bean I can say that I tried it and was well satisfied with it. The Whippowil pea is also good. I think you should sow the bean a little earlier than the Whippowil pea. We do not care whether the seed ripens or not. My idea is that if the seed is formed and partially ripened you get as much value from it as if we allow it to go to maturity. We know that the Crimson Clover is not always a success. I have sometimes found that it is difficult to get a stand. Then, too, in some soils if you let it grow too late in the spring you will have a hard, dry soil.

Mr. Aultfather: I want to give my experiences in pruning. If I would have my way I would cover my ground with clover and dig around the trees and cut them back every year. I think that is better than cultivation. I had 300 trees set out two years ago. Last year I gave the orchard to my boy and he pruned it all but three rows. The pruned trees were green till late in the fall. We pruned again this year without cultivation and they are green this fall. I tried the same experiment with some Elberta peach trees, and I found that the pruned trees bore better than the others that were not pruned. There was only one tree that died this year. This orchard I am speaking about lies to the west. I pruned these trees severely, and one of my neighbors said that I could not slash and orchard that way for him. I believe that if we had to adopt either pruning or cultivation I would adopt pruning.

President: This discussion has certainly been a very interesting one to all of us, but the time is passing rapidly and we must go on with the program. You will now listen to the report of the committee on Plant Distribution.

#### REPORT OF THE COMMITTEE ON PLANT DISTRIBUTION.

At the annual meeting at Euclid, 1898, in accordance with a motion by Mr. Dille, a committee was appointed to formulate a plan of plant distribution among the children of members of local societies. The object being to awaken an in-

terest in horticulture among the younger generation and at the same time endeavor to form a closer union between state and local societies.

The committee, after duly considering the matter and from lack of apparent local society in the state, asking that the matter be duly brought before his society and have action taken upon.

The circular proposed the following plan: On the approval of local society the secretary send to this meeting of the state society a list of names of children as parents might think would be interested and would properly care for such plants, that action might be taken at this meeting.

The committee accordingly issued a circular and mailed to the president of each interest from local societies, together with the expense and labor that would naturally be incurred in carrying out such a measure, have decided to defer action, believing the plan impractical.

Respectfully submitted,

E. H. CUSHMAN,  
H. H. AULTFATHER,  
W. N. SCARFF.

President: What is your pleasure in regard to this report?

N. H. Albaugh: I move that it be accepted.

And thereupon the society accepted the report of the committee.

Prof. Selby: There is an organization in the State of Ohio maintained by the students of O. S. U. known as the Ohio Students' Union. I am experimenting in connection with that organization. They took a great interest, last year, in the matter of flower growing by children. It occurred to me to suggest that in case the State Horticultural Society is inclined to continue that work, that a cooperation should be secured between the Students' Union and the State Horticultural Society.

Pres. Cushman: We will now listen to a report of the committee on Entomology, by Prof. Webster.

Prof. Webster: I do not know what the penalty would be for reading a report here without saying something about the cold weather. I seriously thought yesterday of having Prof. Green make a stereopticon view of our president as he sat on the stage with his overcoat and over-shoes on and his hat on while presiding over this meeting.

#### THE LAISSER-FAIRE, OR LET-ALONE POLICY AS APPLIED TO THE CONTROL OF INSECTS.

By F. M. WEBSTER.

In the evolution of plant and animal life, one or more species have come to prey upon, and thus hold in check other species, thereby preventing any one of them from gaining a monopoly and crowding out another. An insect does not attack a plant, however, with such an end in view, but in order to get something to nourish its body and enable it to reproduce its kind. Each female insect is, in all probability, capable of producing more young than, under normal conditions and environment can survive. There are few plants that are not capable of reproducing vastly more rapidly than is possible under normal conditions. The female insect may deposit a hundred eggs where but a single young can find a sufficient food supply. The forest tree produces enough seed to start a forest, but the

parent with its wide spreading boughs, which shut out the sunlight, smothers her young while yet in embryo. But, let a thundred bolt rift the parent from top to root and destroy her, and a hundred of her progeny will spring up to take her place, only one of which can survive. The struggle is now between her progeny, and only the one most favored can survive. The one that has the greatest advantage over the others will push up and, as did its progenitor, smother its fellows, either killing them or weakening them so that they succumb to the natural enemies, plant or animal, or unfavorable meteorological conditions, or both.

If we go to a country uninfluenced by man we find four conspicuous phenomena: 1st. Animals preying upon plants. 2nd. Animals preying upon animals. 3rd. Plants preying upon plants. 4th. Plants preying upon animals. An insect may prey upon one plant and at the same time be preyed upon by another plant, while the last may fall a prey to another insect, and this in turn be destroyed by its own insect parasite, until these interactions of organism get beyond the field of human observation.

These phenomena deal with suppression, with restraint; with the protection of the few and the destruction of the many; with the survival of those few that have an advantage, over the many who do not have that advantage.

Let us now take up another set of phenomena; such as deal with diffusion and adaption, for there is a constant effort to get out from under these repressive influences, both among animal and plant life. Birds, and larger animals can wander about, and establish themselves wherever they can adapt themselves to their environment. Insects can fly, or they are carried by the winds, or on the feet of birds, or on the bodies of other insects and also on the larger animals, or float about on the waters, on driftwood or other debris. The seeds of plants are also transported by the winds, or they become fastened to the covering of animals, or attached with the soil to the feet of birds, or even in the stomachs of these, or they are carried about in currents of water, both fresh and salt. Probably many species are carried into distant localities, again and again, without being able to establish themselves, and doubtless many are never able to do so. But the more fortunate in time drift into a particularly favorable locality during seasons especially adapted for their development, and they gain a foothold. Later, they may be swept away by unfavorable weather, or the more hardy may survive and become acclimated, but in doing this, they may become so changed as to lose their specific characters and become what the scientific man will call a new species. In other words, an uncongenial environment will often prevent their too rapid increase until natural enemies, native to their new home, have learned to prey upon them and thus hold them in check. Thus there is no radical change in the normal condition of the fauna, or flora, as a whole. Sometimes this is not the case and years after the species will suddenly come to the front in overwhelming numbers. The Clover Root-borer, *Hylastes obscurus*, and the Clover-leaf weevil, *Phytonomus punctatus*, did not become seriously destructive in this country until long after they had been introduced from Europe. It will be seen, then, that natural introductions are not of common occurrence, and as against such the "let-alone" policy might well be followed.

Let us suppose, for the better illustration of my points, that the state of Ohio is a vast wilderness in a perfectly natural condition and as yet untrodden by the foot of man. We should, under such a condition, find animal and plant life equally balanced and each species held within numerical bounds by the others. If, on account of meteorological changes or the ravages of fire, any one species should get the advantage, any great increase would soon be checked by other species, and no financial loss could possibly take place, because there would be no such a thing as commercial values.

Let us now introduce man in an uncivilized condition. He will be content with the natural fruits, and the flesh of animals which he can kill, and will want only a sufficient amount to sustain his own life and that of his progeny. His clothing will be of skins or of the prepared bark or fibers of the trees. The little that he consumes will come from the surplus or reserves of nature, and will cut no figure in the fluctuation of animal and vegetable life. He will slip into place among the former without creating any confusion. He will be preyed upon by the wild beasts, but his superior intelligence will enable him to protect his own life and that of his offspring. He can well follow the "let-alone" policy, and, in fact, can do nothing else. Suppose we now allow our savage to add Indian corn to his bill of fare. His very first move in this direction will be to clear a plot of ground of existing vegetation. This is simply to stir up an insurrection among the plants, for as soon as a space is cleared and the grain planted, not only will the outraged species seek to recover the ground and choke out the corn plants, but other plants will seek to gain a foothold. A very similar condition in human affairs would result from introducing into some of our towns an autocrat in business or politics, who would attempt to overthrow the old established order of things and erect a regime of his own. He would be assailed on all sides and unless very strong in his own might, would need staunch support. Among animals, the invasion will cause less disturbance, but if any large area is brought into cultivation, the insect enemies of grass plants will begin to prey upon the corn. Thus we see that as soon as man ceases to be content with what nature gives him the *Laissez-faire* policy must cease and the protective policy begin.

Let us now withdraw our aborigine and in his stead place an up-to-date, twentieth century horticulturist, or farmer. He will not be satisfied to clothe himself and his family with the skins of animals, or feed them and himself upon the wild plum, wild crab, paw-paw and wild strawberry. Indeed, he will probably even draw the line on the Ben Davis apple and the Kieffer pear. He will want not only the very best of fruit and cereals for his own table, but a surplus that will tickle the palate, and please the eye of his more fastidious brother, and induce him to buy, precisely as the southern peach grower sends his large, beautiful Elberta peach into northern Ohio to compete with our early peaches. I have heard it stated that people going along the street will catch the delicious odor of the southern-grown Elberta and will rush to the dealer and buy it, leaving the Ohio grown early peaches to drag on the market. Speaking broadly, if it were otherwise we should have no civilization and no commerce, and our twentieth century caucasian would be on a par with our aborigine and his "let-alone" policy.

It is well known both among horticulturists and farmers that, as we breed up from the original stock to our present standard of excellence, we weaken the vigor of our domestic animals and plants. High-bred animals are less prolific and less robust than the scrub. Our best fruits are constitutionally weakened as compared to the natural. Nurserymen like to get stock from seed of a seedling, as that is as near to a natural product as possible, on which to graft their high-bred varieties. I have heard stockmen say that if they could breed occasionally from the tough, hardy scrub, it would be better for their favorite herds. Not only would it add vigor and hardiness, but the product, whether of beef, butter or cheese, would afford more healthy articles of food. Now, all of this goes to prove what I have already stated, viz., that as we get away from nature, and natural conditions, we must have artificial protection. If we do not follow a "let-alone" policy on the one hand we cannot expect to do it on the other. Thus it comes about that when we plant out our orchards and vineyards, our fields of wheat and corn, we not only place them at the mercy of their enemies, both plant and animal, but we, in advance, rob them of their vigor and strength to hold their own against these enemies. For this reason it would seem only a part of good bus-



ness management to be on the watch not only to protect our fruits, plants and grains from the enemies that are already among us, but to use every precaution against the importation of additional ones from other countries.

But, let us again vary our illustration and surround our up-to-date farmer or fruit grower with people who, though they are not willing to live after the manner of the aborigine, yet are content to let things go pretty much as they will, or, in other words, follow a *Laisser faire* policy. I have sometimes heard it stated that this would be a case of the survival of the fittest, but this is only in part true. It is true that the lazy fellow will get less and that of a poorer quality. But bless you! Do you suppose that hurts him any? His sensibilities have never been developed in that line and probably his poor fruit or grain will be less an eye sore to him than to his more progressive neighbor. He is used to unprofitable crops, and very much unused to the prick of such aspirations as torment his more advanced fellow. He has never learned of any other than the "let alone" and "don't worry" policy. You cannot crowd out such a man as this. Put it as you will, his poor fruit will injure the market for that of a finer quality, and the pests that he raises each year will escape from his premises to yours, and in a greater or less degree, vitiate your efforts to protect yourself from their ravages, and because of this he will, some years, get as much and of as good a quality as you. Taking it all in all, your up-to-date fruit grower or farmer will suffer more, proportionally, in mind, if not in purse, than your man of the "let-alone" policy, thought the latter is alone to blame for it all. It is but a few weeks ago that I visited our fellow member, Mr. William Miller, who had this season sprayed his apple orchard faithfully, and probably effectually, so far as the codlin moth developing on his own premises is concerned. But we estimated his loss by reason of the work of this pest at \$600.00, due, as I fully believe, to the "let-alone" policy of others, some of which perhaps could not have raised that amount of fruit to be destroyed.

It will be observed, that all along, if our aborigine, our up-to-date husbandman or our *Laisser faire* man, would be content with just enough to supply his own wants, and was not particular as to quality, he would have no trouble; but the moment he began to cultivate or began raising to sell, or made an effort to improve the quality above the standard supplied by nature, then trouble began and protection was needed.

The farmer or fruit grower who is growing grain, fruits or stock for profit, needs protection from the enemies of these, but he also needs protection from the results of the methods followed out by his careless neighbor. In the former case, the application of proper preventive or remedial measures lies wholly within the control of the husbandman himself. In the latter case, the problem to be solved is to prevent his neighbor from producing enemies of his crops, and allowing these to escape beyond his own premises, and this can only be done by legal enactments and the proper enforcement of the same.

For myself, I cannot see any room or even an excuse for a let alone policy in this matter. The whole idea is based upon the ability of nature to readjust herself after a sudden change of influences has made a severe inroad upon some one or more species of organisms. If an exceptionally severe winter kills out a very large percentage of the individuals of a species, the enemies of that species will soon become reduced in numbers from a lack of food, while the host species, owing to its fecundity, will soon recover its normal numerical strength. But, in order that this may be brought about, there must be a perfectly natural environment, uninfluenced by man, and this can never occur so long as we cultivate, buy and sell or improve upon the quality by artificial means. If I wound the flesh of my arm, nature will heal the cut, but if I cut off my hand, she will no more supply the missing member than she will cause another body, the counter-

part of myself, to grow out from the detached hand. Hence it is that, so long as we cultivate and improve, so long as we grow to sell, so long as we buy from foreign countries or distant portions of our own, we shall have no practical use for a let alone policy, as applied to destructive insects, and especially is this true of comparatively new countries like ours. It is not to be supposed that every plant, vine or tree that we cultivate will be destroyed, but the profits of cultivation will be reduced and it is the profits that we are trying to save through the benefits of applied entomology. Thus, the progressive, successful husbandman not only needs to protect himself, but he needs some means of compelling his negligent neighbor to follow a similar course.

What has been said of local conditions and results will hold good when we come to consider the international aspects of the problem. Commerce in plants was never contemplated by nature, though the natural diffusion of these appears to be the object of their every effort. But nature must do these things in her own way, or else there is confusion and chaos. When we transplant a shrub, tree, plant or vine from one country to another, within the space of a few weeks, we do what nature never did and never could accomplish, except after many attempts and after years of effort, and, perhaps, even then only by modifications in the plant itself. But with our artificial introductions it sometimes occurs that plants introduced, escaping their natural enemies which hold them in check at home, themselves become pests; or some of these natural enemies of their native home are brought with them and, as these plants are set out among native species closely allied to them, the enemies escape to these also and create great havoc among them. It is here that we are getting farther away from nature than before, and the *Laisser faire* policy is even less applicable, and reminds me of trying to keep a team of runaway horses in the road by pulling upon one line and dropping the other. It has always seemed to me that we needed to protect ourselves, first, by national measures from foreign introductions, and second, by supplementary state measures, against such insect pests as may escape through our national quarantine, and also from such as we have among us that are controllable. Not a great while ago, a writer, who was discussing national legislation against foreign pests, used the Wood Leopard moth, *Zeusera pyrina*, as an illustration of the probable inefficiency of national quarantine. As the pest is a wood borer and supposed to have been introduced into this country about 1881, in some portion of a ship's cargo of timber, it would have escaped detection if only nursery stock was inspected. But, so far as we know, it was introduced at a single point only and is even yet confined to a limited area in New York, and New Jersey in the vicinity of New York City. With proper authority and sufficient funds it might have been nearly or quite exterminated ere this. The same writer, some years ago, when dealing with another introduced insect pest, the Sinuate Pear Borer, *Agrilus sinuatus*, stated that with \$5,000 and right to enter and treat ingested premises, he would engage to stamp out the pest in his state. Now, there is the whole problem in a nutshell. Guard by national quarantine from the introduction of foreign insect pests, as is being done in California, and then provide for state management of any that may escape the vigilance of the national inspector, before such have become widely diffused and, when feasible, take charge of measures of control or extermination of the foes we already have with us.

We are sometimes cited to the older portions of Europe, and told that there we will find proof of the efficiency and value of a let-alone policy. Europe is an older country than ours; the holdings are smaller and the agriculture and the horticulture more intense, and the laborer is more familiar with the insect enemies of his crops than are ours. Outbreaks are often nipped in the bud, so to speak, and nothing is thought or said about it. Besides, there are outbreaks of de-

structive insects, and we, on this side of the Atlantic, occasionally hear of their devastating work. But the United States is not located in Europe, and we do not need to look there to learn what the Codlin moth, Hessian fly, cabbage worm and San Jose scale will do for us. No one supposes, for an instant, that any one or all of these will devastate the country and drive us to starvation, and we were fully aware of the fact long before some of those who are wildly and energetically informing us that such will not be the case were born; but these pests do destroy millions of dollars worth annually by their attacks upon our fruits and grains. They do not and will not destroy life, but they cost us dearly each year, and it is the profits of the husbandman that are thus consumed. The foreshortening of a crop of fruit or grain means that the growers thereof will spend less money; the merchant will have less trade; there will be less surplus to ship to other states or for export. The effect is to cause financial stringencies that otherwise would not exist. They filch from our profits, and it is these that we seek to protect. But we never can do this by a let-alone policy.

The *Laissez faire* policy does not, speaking broadly, belong with cultivation, intense and progressive husbandry, commerce, progress or civilization. It belongs with the trackless forests and unbroken prairies; with the undeveloped mines; with those lakes and rivers whose waters have felt the ripple of only the rude canoe of the savage. Of what profit is it to cause two blades of grass to grow where only one grew before if the value of both is to be reduced fifty per cent. by the natural enemies of that grass? It is what is left, over and above the cost of production, that we are trying to protect and save, and not human life. We want national protection from our enemies without, and state protection from the pests within our boundaries, wants that have come to us with our advance in civilization, and which will only disappear when we go backward to the primitive life of the aborigine.

L. B. Pierce: Does the beetle of which you speak eat the leaves?

Prof. Webster: No, it punctures the leaves and produces spots on them.

Pres. Cushman: Have you ever tried arsenite of lead for the destruction of these beetles?

Prof. Webster: Not to any extent, but perhaps if used they would not get enough to kill them, because they always eat into the fruit and even continue to eat directly into it. There is so much foliage that I fear we could not destroy them in that way.

Mr. Montgomery: The secretary of our Fair Company is here and extends an invitation to our society to visit the old historic fair grounds of this city.

Pres. Cushman: You have heard the invitation to visit the fair grounds. What is your pleasure?

On motion the society accepted the invitation to visit the fair grounds at 12:30.

Mr. Albaugh: We have listened to a very interesting report in which Prof. Webster shows us the condition of his work and the work that is before him. I think it is proper that this society should understand some of the work of the State of Ohio in regard to San Jose scale legislation, or rather lack of legislation on the San Jose scale. I think we should understand something of the legislation of other states and the

anomalous position it puts our nursery interests into in this state. I believe I can suggest something that will be of interest to you all. As you know, we have no restrictive insect legislation upon the statute books of Ohio that is worth a penny. It is perhaps known to you that the Ohio legislature meets every two years and that it has not been in session for nearly two years. At its last session, two years ago, a committee was appointed by this society, which met there and endeavored to get some insect legislation upon the books.

Pres. Cushman: It seems to me that this matter should be discussed after the next report is read. That is a report on the San Jose scale legislation. Is that committee ready to report?

Mr. Harrison: I want to say that we have had an informal meeting this morning, and talked over the matter a little. I am ready to submit the report of the meeting.

#### REPORT OF THE COMMITTEE ON THE SAN JOSE SCALE LEGISLATION.

The Legislative Committee having held an informal meeting, beg leave to report that they have not formulated any bill to present to the society at this time for its approval.

We have read up the laws in force in the various states which have adopted laws for the control or suppression of the San Jose scale, and are most favorably impressed with the Illinois state law, and your committee are of the opinion that with some slight modifications, a similar law would accomplish the desired results in this state. But it is the opinion of your committee that the legislature will be more free to grant the necessary appropriation for the stupendous work required, if the sum is asked exclusively for the control and suppression of the San Jose scale. Still it is essential that the nurserymen of the state have a blanket certificate covering all seriously injurious insects and fungoid diseases to admit their products into those states whose laws require such.

Your committee would think it desirable, if its successors who are to be appointed at this session, would hold a meeting while here, and agree on the measure to be presented and that they meet at Columbus early in January and use every effort for its adoption. All of which is respectfully submitted.

J. J. HARRISON, Chairman.

Pres. Cushman: You have heard the report of the committee, what is your pleasure?

On motion the society adopted the report.

N. H. Albaugh: I might say a word as to the report of this committee. Nearly all the surrounding states have insect legislation upon their statute books looking principally to the prevention of the San Jose scale. There is no national legislation, although two years ago I was appointed on a committee to go to Washington. We laid the matter before the house committee and there were eighteen members present. They all agreed to the bill, but the Cuban War came up and nothing could be done. The same committee was continued and I expect to go to Washington again and hope to do something. It leaves the nur-

serymen of this state in a peculiar condition. They cannot ship into the surrounding states because they have insect legislation. Stock cannot be there sent without a certificate saying that the stock has been examined. It makes no difference how much money he puts into his nursery, unless he has a certificate he cannot deliver the goods. By the courtesy and kindness of Prof. Webster, the well-known entomologist, the nurserymen have been able to pass the examination and obtain the certificate. This expense has been borne by the nurserymen themselves. The expense of \$5.00 per day has been paid by the nurserymen. This year, owing to the amount of work of the professor, the examination was not made until September. This prevented the nurserymen from issuing a catalogue containing the certificate of inspection. I see that in the case of Ellwanger & Barry, of New York, the examination was made on July 1st and very shortly after their catalogue was issued and sent all over the United States. I want to say we did not get in a single fall order. I am told by Prof. Webster that under the present arrangement it would be impossible to attend to this work any longer. There is no law in this state to have a state inspector appointed. These certificates expire next June. I want to ask this society, the highest authority I can conceive of, the only one acknowledged by the legislature, the only one to whom any appropriation is made each year, I ask this society at this meeting to elect an entomologist of this society. I want him to make an examination of all the nurseries, so that we can get into the field next year not handicapped by our brethren of other states. Another unfortunate position which needs strong effort is that we are the dumping ground of the San Jose scale. There is not a single nurseryman who does not seek the Ohio ground to dump his San Jose scale upon. We all know that the man, J. T. L., whose initials stand for just too lovely, has planted it all over Ohio. I do not know what the legislature will do this winter. I do say this society should this afternoon select an Entomologist. If you do that we will see that he is recognized by the other states, or know the reason why. Another peculiar position is that if a nurseryman cannot show his title clear against the San Jose scale, he forfeits his right to a certificate if he buys trees of an uncertificated nursery. J. T. L. and his class may plant the San Jose scale near me and ruin me and I cannot prevent it. I shall do all in my power before the national committee to get a national bill that will be uniform. Up in Michigan they have drastic laws. They even refused our Entomologist's certificate until we proved that we had the best one in the United States. (Applause.) I want to say if we go into next year without anything to protect our interests, our nursery interests are practically destroyed. Something must be done to protect us. We, as nurserymen, ask you to elect, with our other officers, an entomologist for the Ohio Horticultural Society. We want one, and it will not cost you one cent. The nurserymen are willing to pay it. We want a state

Entomologist, who is free to come and see us. We want a man who can come in June or July, if necessary, and examine our stock so that we can go into the markets without being handicapped and so we can have a fair chance with the other states. In all of this I want you to understand that Prof. Webster has no better friend in the state than I am. I will not detain you any longer. I make it a motion that this society elect a suitable person as Entomologist.

Mr. Woodward: I want to ask if the expense is to be borne by the nurserymen.

N. H. Albaugh: Not one cent of expense to the state. If anyone desires he can send for the state Entomologist to examine his stock. We pay him \$5.00 per day.

Mr. Carr: In this case the Entomologist would have to be a man who holds another position, as it would not make him a sufficient salary.

Prof. Webster: I think Mr. Albaugh knows that every state officer must be elected or appointed.

Mr. Farnsworth: I am glad that Mr. Albaugh has brought out the interdependence of the tree grower and the fruit grower. We are mutually interdependent. Any needless restriction we may put upon the nurserymen we must pay for. If we neglect our fruit-growing, we pay the penalty for it. There is this trouble, that no matter how well you are protected, if your neighbor is careless, he may injure you and you cannot prevent it. We must have protection in this matter.

Prof. Green: Mr. Albaugh's motion provides for a suitable person, but how to get a suitable person for \$300 a year is beyond my comprehension. He cannot occupy some other position. If we cannot get a suitable person you would better have none. The State Horticultural Society cannot employ and pay a man. I can see how you can bridge over, I think. The experiment station has been helping what they could. I can speak only for myself. I do not see how this society can secure the right man for the pay.

Member: Would he be recognized by other states?

N. H. Albaugh: He would be recognized just the same as any other state officer. You would want to get a good man and you would get the recognition.

Mr. Wiley: I want to say one word in connection with this motion. I am interested not so much in nursery stock as I am in peaches. We have the Yellows. I think you will find the Yellows work their way into our country. One trouble in these matters is to get some one who will enforce the law.

N. H. Albaugh: You must first get your law.

Mr. Wiley: Why cannot we have some general examination of our orchards for the benefit of the peach growers?

Mr. Albaugh: We want a law. If we get a state law we are all

right, but suppose the legislature does not do anything, what position are the nurserymen in? This is the last meeting until next December. Unless we have protection there is not a nurseryman that will be able to come to the meeting next year and pay his fare. I do not ask you to take the law into your hands. I will take the chance that if you appoint a state officer, that in the absence of any other officer his judgment will be respected. So far as the \$300 is concerned, you need not fear. Suppose it costs each of us \$100, we had better pay for it. We ask you to do yourselves no harm, but do not let us fall to the ground. You need not set the price. It is none of your business if I get Webster to come down and stay a week and pay him \$1000. You are anxious about your orchards and so are we. Mr. Lovely may send trees to your neighbor and ruin you or he may send trees to my neighbors. We will pay the expense of the Entomologist. We are compelled to have it. The preacher is coming to our house, and we must have meat. Do not deny us this as it is the only chance we have got.

Mr. Harrison: Suppose we should antagonize the legislature by taking this into our own hands?

Mr. Albaugh: We are doing that now with our experiment station.

Mr. Harrison: I think we should go to the legislature or Governor and ask for some one to be appointed. It seems to me that we should not be hasty in this matter.

Mr. Carr: I would like to ask if it is true that the experiment station cannot do this any longer, or is it only a supposition?

Prof. Webster: I want to call your attention to the fact that you can make a state inspector if you want one, but you cannot make a State Entomologist. We can tide you over until next June. You have a certificate good until next June.

Mr. Sweet: I am a fruit grower and not a nurseryman. I have been a fruit inspector. The trouble about all this is, that there is nothing compulsory about it. If there is no law compelling people to destroy infested orchards, it would be no good.

Mr. Whitney: I am a nurseryman. It seems to me that something must be done. I am at a loss to know how to vote. I do not know whether a good entomologist could be secured or not. I do not know whether action here would jeopardize action in the legislature or not. If it would I should oppose it.

Mr. Miller: It seems that it is the sense of this meeting to postpone the further discussion of this matter until after dinner. I make a motion to that effect.

The motion was adopted.

Pres. Cushman: We will now listen to a paper by Homer C. Price.

## A CLASSIFICATION OF THE PEACH AND SOME VARIETIES FOR OHIO.

BY HOMER C. PRICE.

A classification is largely a matter of convenience and at best must be more or less arbitrary. Exceptions will always be found, and one class will gradually pass into another. In botany we find plants standing on the borderland of two genera, and one botanist will put them in one genus and the next botanist put them in another genus. In this gradual grading of one class into another we see the beauty of nature. She cannot be surrounded by straight lines, which are always harsh and abrupt, but as one type gently melts away into another and the lower forms evolve into higher, we see the hand of a supreme Ruler directing the destiny of plants and animals as well as of man.

The peach has been variously classified by botanists, sometimes as *Amygdalus persica*, *persica vulgaris* and the commonly accepted classification of the present which gives it as *Prunus persica*. Many schemes have been devised for classifying the different varieties of the peach. One of the most common and most largely used classification is based on the color of the flesh and whether it adheres to the seed or not. Another method, and one that is especially valuable to the nurseryman because it enables him to determine varieties before they come into bearing, is based on the presence or absence of glands at the foot of the leaf, and their form, whether they are globose or reniform.

In 1886 Mr. Onderdonk, of Nursery Texas, published a classification of the peach in the report of the United States Department of Agriculture, which was based on its origin and geographical distribution. This classification is original in that it attempts to divide the varieties into races and then point out the zones in which these races will thrive. So that the orchardist, knowing the race that does best in his latitude and also to what race the different varieties belong will be able to judge what varieties he will be safe in planting.

Mr. Onderdonk divides the peaches cultivated in America into five races, as follows: (1) Peen-To, (2) South China, (3) Spanish or Indian, (4) North China, (5) Persian. The latitude in which these races thrive come in the order in which they are named, beginning at the south, i. e. the Peen-To race thrives the farthest south; overlapping its zone and extending farther north comes the South China race, followed by the Spanish and, almost of equal extent but extending still further north, comes the North China race, and last, and the one to which the most of the varieties cultivated in Ohio belong, comes the Persian race.

Now just a word in regard to the characteristics of the different races.

The Peen-To race includes the flat peach of China and its seedlings, notably the Angel peach. This race is valuable to Florida and southern Texas and grows vigorously where other races will not thrive.

The South China race is represented by the Honey peach, seeds of which were brought from southern China. The fruit is characterized by being slightly flattened and the apex elongated and recurved. Like the Peen-To race it is valuable only to the gulf states.

The Spanish or Indian race is supposed to have descended from seeds that were brought over by the Spanish and distributed by the Indians. The trees are large, vigorous growers and heavy and sure yielders in their belt, which lies south of Ohio. Among the best varieties belonging to this race may be mentioned Columbia, Galveston, La Reine, Texas and Victoria.

The North China race includes seedlings of the Chinese cling, which is supposed to have come originally from Northern China. It thrives farther north



than the Spanish race and several of our most valuable varieties, notably the Elberta, belong to this race.

The Persian race is by far the largest of the races and contains the majority of our best varieties, such as the Crawfords, Smock, Salway, Mt. Rose, etc. It is supposed to have come originally from Persia, which has long been recognized as the home of the peach. In the gulf states the varieties belonging to this race are almost total failures.

Although these races grade into each other and many varieties can be found that it would be hard to decide to what race they belong, yet the varieties that have been chosen as types of these different races show distinct botanical differences in the form of the buds, the manner of growth of the branches and the form of the seeds as well as of the fruit itself.

Artificial and incomplete as this classification may seem to the orchardist, yet it is a move in the right direction to try to work out the origin and habitat of our varieties, so that we may be able to predict with reasonable certainty the latitude in which they will be likely to succeed.

But now to take up a more tangible part of my subject, some varieties of peaches for Ohio. It is always a delicate subject to discuss varieties, because the success of a variety depends upon so many things. Almost every variety has a locality especially adapted to it, and outside of this range it will not do its best. Again, the success of a variety is a personal matter and what may suit one man may not suit another, and a variety that will be recommended very highly by one man may be discarded by another.

Yet the proper selection of varieties to plant has a great deal to do in either making or breaking the success of the peach grower. And while we cannot lay down iron-clad rules to guide the orchardist in selecting varieties, yet there are a few general considerations that should always be taken into account.

#### PURPOSE FOR WHICH THE CROP IS TO BE GROWN

is the first thing to consider. Is it for home use primarily, or entirely a commercial orchard. If a commercial orchard, what kind of a trade will you try to supply? If a home market entirely and you have one in which people are willing to pay high prices for fancy fruit you can grow some of the varieties that are light bearers and fruit that will not stand shipment. If the probability is that the bulk of the crop will be shipped by water or rail, then a good, firm fleshed peach that will hold up well should be planted.

#### NUMBER OF VARIETIES TO PLANT.

The novice that wants to test varieties may plant a few trees of all the kinds that he can get, but the man that is planting an orchard to make money out of it should confine himself to a few of the best varieties. It is better to have six or eight good varieties that will ripen consecutively than twenty or twenty-five. If a variety is really good it is better to have trees enough of the one variety to furnish all the fruit that can be handled rather than have the same amount of fruit from four or five different varieties.

On the other hand, simply because a variety is exceptionally good it will not do to go to the other extreme and set the entire orchard of the one kind, because the entire crop would have to be harvested and marketed in the course of ten days to two weeks.

## SELECT VARIETIES TO RIPEN IN SUCCESSION.

Not only because it gives a longer time to harvest and market the crop; but because it will give the grower an opportunity to work up and hold a trade. The man that has ripe peaches to market for eight or ten weeks has much better chance of holding a dealer's trade than one who must market his crop in the course of a month. In this locality the season for ripe fruit may be extended from the first of July to the first of October and even longer. The July peaches, it is true, are of little value, but they help to get the trade started. But as a rule very few of them should be planted, because they are unsatisfactory both to the grower, dealer and consumer.

## RAISE WHAT THE CONSUMER WANTS.

For the open market the peach grower must look first to size and beauty of fruit. However much we deprecate the fact, still it is a fact that the majority of people buy peaches as they do most other things, on looks, and a large well-colored variety will outsell a more modest looking but much higher flavored fruit. The man whose livelihood depends upon the returns of his orchard cannot afford to spend the time and effort necessary to educate people to use a peach that is high in flavor and yet of only medium size and appearance. He must cater to the market and if necessary sacrifice quality to size and beauty.

## AVOID NOVELTIES IN THE COMMERCIAL ORCHARD.

The commercial orchard is no place to test new varieties. A man cannot afford to stake his capital on some untried variety simply because it is pushed to the front by a nurseryman. I know of no better motto to follow than the old couplet:

"Be not the first by whom the new is tried,  
Nor yet the last to lay the old aside."

I have no patience with the man who is constantly chasing off after new and untried varieties and paying large prices to get duped. Run over the list of the best varieties of our fruits and see how many of them have been introduced in the last ten years and compare this with the number that have been introduced during that time.

I am not protesting against the introduction of new varieties, but I am protesting against the wholesale distribution of untested varieties. The average fruit grower cannot afford to spend money, ground and labor to find out the value of every new variety that is brought out. This is one of the lines of work for our experiment stations to do, and while we are waiting for them to make the test, we have an abundant list of standard varieties to choose from, that we know will succeed.

Last spring while doing some work at Cornell University, under Prof. Bailey on peach culture I sent on a list of questions to peach growers of Ohio and mostly to members of this society. In one of the questions I asked that they name eight varieties that they considered best in their locality for a commercial peach orchard. Out of one hundred lists of questions sent out I received sixty answers and I have tabulated the replies as follows. Out of the sixty lists sent in for a commercial orchard

43 included .....	Elberta.
36 included .....	Late Crawford.
35 included .....	Smock Free.

27 included	Salway.
26 included	Old Mixon.
24 included	Mt. Rose.
22 included	Crawford's Early.
19 included	Stump the World.
13 included	Champion.
10 included	Beers Smock.
9 included	Crosby.
8 included	Lemon Free.
7 included	Chairs Choice.
7 included	Early Rivers.
6 included	Kalamazoo.

Fifty-three other varieties were named, thirty-five of them being named only once. Eighteen were named in from two to five lists.

While such results as these cannot be regarded as conclusive, yet they show the comparative popularity of the different varieties throughout the state. It is very noticeable that the old varieties are still the most popular, with the exception of the Elberta, and this shows how quickly a new variety that possesses real merit will come to the front. Although the list as given is small and probably does not include a great many good varieties, yet it furnishes a safe list for the planter to choose from.

But after all is said and done, every man must take his own measure and decide for himself what he shall plant and in what propositions. Horticulture is primarily a business and must be run on business principles. Inflexible rules cannot be laid down but methods must be elastic enough to suit circumstances. The man who can most readily adapt himself to his surroundings will be the most successful.

Study the markets, study the varieties, study your composition. Take for your motto, "The best is none too good," and be satisfied with nothing short of the best. Go to work and give the peach orchard clean and thorough tillage, spray, prune and thin, and before many years, surrounded by the rich, luscious fruit mellowing in the autumn sun, you will reach the Elysian state described in the words of Coleridge as

"Where 'toil shall call the charmer health his bride,  
And laughter tickle plenty's ribless side."

Pres. Cushman: We will now listen to the discussion of this paper by Mr. Wiley.

#### DISCUSSION.

BY MR. WILEY.

Mr. President, Ladies and Gentlemen:—The subject assigned me, that of "Peach Growing and Marketing," is one of vast importance in many sections of our country. The fruit is beautiful to look upon and its deliciousness makes it one of the ready fruits in our markets. Extra efforts should be taken by every farmer who is the possessor of high and rolling land, to have an orchard; if not a large one, one of medium size; in any case a few trees, because there is no fruit grown that affords more pleasure to the grower than a rich and juicy peach.

We of this latitude possess great advantages in being able to produce this delicious fruit in the open air. In other countries they are obliged to force them under glass at great cost. On almost every farm in this community there are

locations where a peach orchard can be secured, yet there are many farms that are not provided with this luxury, and in fact many farms are almost destitute of fruit of any kind. I would not like to be a boy growing up and have to live on pork and potatoes the year round! I don't believe it would be a good place to board, and why any farmer should compel his wife and children to live from year to year without these blessings, when with a little effort he might easily procure them, is one of the mysteries of the nineteenth century.

To have an orchard, and a good one, requires the understanding of a few simple points. First is the choice of location; it should be on an elevation the altitude of which should not be less than 130 to 200 feet above the beds of surrounding streams and higher, if such locations can be secured as to be above the frost line, as the elevation has much to do with the winter and spring frosts (91 spring, 92 winter).

With those that have not got high locations and are desirous of experimenting, it might be well to try the method adopted by orange growers in California. Petroleum is run through pipes laid between the rows and burnt at equal distances. Clouds of vapor which arise prevent frost in the air. Large vessels of petroleum are used in small groves. The cost is estimated at ten dollars per acre.

The second thing to be considered is the preparation of the soil, which should be much the same as when preparing for a crop of corn; the ground should be well pulverized and put in the best of condition, as it will assist very much in the matter of planting. Next is the selection and purchasing of stock, which should be attended to with care, as much depends upon the varieties selected, as to whether they will meet the demands of your market. A great many people put off this important matter to the time when the enterprising tree agent comes along and they fondly hope that he may be able to help them out, and he does—of their cash. Many of us have been taken in and done for by these men, who are smart enough to cater to our own foolishness, for it matters not what varieties we might wish they are just the kind they have got, and buyers are often deceived and badly disappointed to find that when their trees come the varieties are not what they bought as they think. If they will hunt up the order they gave for their trees they will find at the bottom of the order, in fine print, the following (or something similar): "In case we cannot furnish all the above varieties, we may substitute others considered by us as equally desirable."

I wish to impress this fact, that it is not desirable to have too many varieties, as it is better to have one good one than three of equal merit. Some of the kinds that have been tested and proved to be profitable are the following: In the way of early varieties there are none that have proved an entire success. The Alexander is one of the earliest but is subject to rot. The Hales early is one of fine flavor, but seldom arrives at maturity owing to rot and the ravages of the curculio.

We next have Coles early red, a finely flavored peach and some years a very profitable one. Then there are the Crawfords and the Mixons, which should be found in all orchards. For later varieties we have a multiplicity of kinds, many of them very desirable when planted on soil that is congenial to their nature. All early varieties should be planted where they will be well exposed to air and sun.

All white fleshed peaches should have a southern or western location, as they will color much better when exposed to the direct rays of the sun. Yellow varieties do well on northern exposures.

We should always keep in view the fact that we will want to sell our surplus fruit. This should lead us to plant the most trees of those kinds that are known to do well in our locality and to sell best in market. When consumers learn that a certain variety is good they will be sure to call for it. The judicious grower will remember this and if he does not know which are the best varieties for the

market he will consult the leading growers in his vicinity as to the kinds that are most popular with the people; and his actions will be governed accordingly.

There is no reason why we should not have an abundance of peaches almost every year in this and similar locations. The peach tree is such a rapid grower that we can afford occasionally to lose an orchard, and plantings should be made and new orchards should be started every four or five years, in order to take the place of those that die out. The peach tree in its budded form is not long lived and after it has borne a few years and shows signs of decay it should be destroyed and replaced with new ones.

As to the time of planting I think the spring of the year preferable and would suggest that it be done as early as conditions of soil will permit, so as to receive the benefits of the spring rains in case an early summer drouth should occur.

All trees should be planted about two inches deeper than they stood in the nursery, so that when the soil settles they will be much in the same position that nature placed them. Having your trees now in position, it is very requisite that their care and culture should be such as to produce a healthy and well developed tree, for we need not expect to gather fruit from a starved and scrawny tree. For the first three or four years the trees should receive as careful cultivation as your corn or potatoes. If the soil is thin use a liberal supply of barnyard manure or commercial fertilizer containing a large per cent. of nitrate potash. Remembering the old adage, as the twig is bent the tree is inclined. While your orchard is in its infancy, great care should be taken that it receive the proper protection. Its enemies are many but I will mention but two. The borers and the preserving rabbit, whose capacious maw was never known to be full when coming in contact with the grower's choicest trees. To arrest the work of the borers many resort to the knife and cut them out by first taking the dirt from around the trunk of the tree, others use an application of lime upon the bodies of the young trees in the form of a whitewash. The eggs being deposited by the fly upon the body of the tree near the ground. The lime is offensive as it is to all insects.

As for the rabbits there are different methods of preventing their depredations. The enterprising boy with his dog and gun is a good thing to have around a young orchard, second wrapping the bodies of the trees in such a way that the rabbits cannot have access to them is the most effective method. Trimming a few apple trees and scattering the brush where the rabbits are most likely to frequent is beneficial, as they prefer the apple to the peach.

In the matter of trimming the peach there is a diversity of opinion among growers. Some prefer to let nature do its own work in its own way, to which we would take exceptions, as the growing of peaches is for profit and depends largely on the skill of the grower. At the time of planting I would recommend the cutting off of all branches, leaving nothing but the stem of the tree, and leaving the stem about three feet high.

While the tree is young the body should be kept clean of all branches for at least a distance of two feet from the ground, and as the tree becomes older all dead branches should be trimmed out and the tree kept in symmetrical form. Where size in the fruit is the object desired it may be obtained by cutting off the end of branches in June, leaving only so much of the fruit as may be desired. This is the California method of thinning the fruit, and is receiving the attention of many growers, as the size of fruit is an important factor in our markets.

#### HOW TO FLOW.

The diseases of the peach are things we have to contend with. The old adage, "No excellence without great labor," is applicable in all vocations of life.

The rot is one of the diseases with which the grower has to contend. It is quite prevalent on the early varieties, some seasons destroying the entire crop.

The scab, or blight, affects many localities, and is the result of a fungus growth.

The yellows, which may be called the leprosy of the peach, appears to be a constitutional disease, as no external cause has yet been assigned for it. It is a contagious disease spreading gradually through whole orchards. Trees so affected should be destroyed as soon as detected.

To those who have commercial orchards, or prospective ones, the matter of marketing the fruit is of vital importance, as regards the profits to the grower. The fruit should be assorted at least into three grades, the first and second grades so marked as to designate their quality. The third grade, composed of the culls, should be fed to stock on the farm, as the returns will be more satisfactory than when shipped to commission men.

In the early part of the season it is better to ship in small packages; crates or baskets may be used, as your customers desire. Later in the season it is not so essential as to the size of package.

What concerns the grower most is the cost of transportation. During the season of '98 over 100,000 bushels of peaches were shipped from Frazeysburg and, owing to their classification by the railroads, the freights were much greater than on other commodities of like weight, thus placing the fruit grower at a disadvantage as compared with those engaged in other occupations. In the vicinity of Frazeysburg we have about 225 orchards, containing about 300,000 trees, so that the matter of transportation is one of vital interest to the growers.

To the growers in other parts of the state I would suggest, might it not be well to look after the matter of transportation and see that our interests are not discriminated against?

No doubt there are those who are contemplating planting more trees, and are asking the question, "will it pay?" If your location is good you need not fear results. Our cities are making rapid growth, and the percentage of population that is consuming is increasing faster than those producing, so there is no reason to be discouraged.

It is well to remember that in preparing the ground, planting and cultivating the trees and in handling the fruit, it will pay to exercise care. An orchard costs money. It takes land and valuable time, and if it is to pay, the work must be well done from first to last. One wishing to have a profitable orchard must give the subject thought; he must read; he must take time to visit the best orchards in his community and learn how they are managed. He must take an interest in his trees, study their wants and provide for them and protect them. He who will not do this is not worthy the rich blessings a good orchard affords.

Pres. Cushman: It will be in order now to discuss Mr. Price's paper.

#### DISCUSSION.

N. H. Albaugh: Allow me a word on this paper. That is my experience. In a carload of trees sent to Georgia last Monday, containing 2900 trees we narrowed down to eight varieties, and of these 60 per cent. was Elberta. We believe in planting things that pay. I fully agree with the essayist that it is not well to try all the new varieties that come out. The Elberta is comparatively new. We pulled out 800 of the Crosby. It is necessary to be careful not to put in everything

that is new, but when you do find new things that are good, plant them. The Burbank has proved one of the best money makers we have.

L. B. Pierce: When I looked on the program and saw this subject I thought it would be dry, but he made it very interesting and I feel grateful for the paper.

Prof. Lazenby: I want to say that Mr. Price is a student in the O. S. U. and has had practical experience in peach growing.

Mr. Montgomery: Some of our peaches have one side that is scabby and are not well developed. What is the matter, and would spraying do any good?

Prof. Selby: We call it scab or black spot. The fungus grows after the fashion of the apple fungus. We found it in Mr. Miller's orchard and obtained quite decisive results from spraying. It should be given at least two sprayings. You will find it in Bulletins 102 and 104. I think if you continue the spraying for several years you get better results.

Mr. Wiley: In 1884 I planted 1000 trees. I cultivated and mulched them and they made a rapid growth. They were planted 18 feet apart. In a few years it was impossible to drive a team between the rows. In '96 I could not get through them and we found this scab on them. Three years ago I cut them back, that is, I dehorned them. I got a beautiful growth of young wood. In '98 I had a fine crop of peaches from that orchard. I saw no trace of this scab and I think the trees were too thick before and too much shaded. Since I dehorned them I have seen no evidence of scab.

Prof. Selby: You will find that this peach scab, like the apple scab, is greatly affected by the season. Do not make your conclusions from a single season or you may be mistaken.

Mr. Albaugh: It is now nearly twelve o'clock, and as we have an engagement to go to the Fair Grounds at 12:30, I move you that we adjourn until 1 P. M.

The society by vote adjourned until 1 P. M.

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#### THURSDAY AFTERNOON, 1 P. M., DEC. 7, 1899.

Pres. Cushman: We will now come to order and proceed with the regular business of the meeting. The first will be the consideration of the motion made by Mr. Albaugh for the appointment of a State Entomologist. You will remember that the motion was postponed for the purpose of giving the members a chance to talk over the matter and that it was made the special order for consideration this afternoon. What is your pleasure in regard to this matter?

Mr. Harrison: I desire to offer the following resolution which is intended as a substitute for the one offered by Mr. Albaugh.

Resolved, that the Constitution of the Ohio Horticultural Society be so amended as to read: That the President of the Ohio State Horticultural Society is hereby authorized to appoint a commission of three, which committee shall make provision for the proper nursery inspection, providing no action shall be taken by the state legislature.

N. H. Albaugh: I second that motion as a substitute for the original resolution. I feel in the same spirit that actuated the old maiden lady when she heard the owl hooting in the woods, while she was praying for a husband, and she responded, "Anybody, good Lord." Anything that will accomplish the results will be entirely satisfactory to me. It is very important that something shall be done in this matter.

Mr. Farnsworth: I do not think it is necessary to revise the constitution in order to appoint this committee.

N. H. Albaugh: I think there might be some question about it. I think it will be better for us to make the constitutional amendment. You see the amendment of the constitution overcomes every objection that has been made. I want to say that we do not proceed to elect under this resolution and the President has the power to appoint the commission. It might be well for us to wait and see what the legislature will do in this matter. If the legislature fails to give us the proper relief, then the duty of the President of this society becomes clear at once. He can go ahead and make provision either for a State Board or State Entomologist, or any other plan that will provide for the proper inspection of the nurseries of the state. I think this resolution covers it all. I think this resolution if carried out will afford us the proper relief.

Pres. Cushman: You have the resolution as read by our secretary and you have ample time for the consideration of it. Are you ready for the question? It is on the amendment to the constitution.

Thereupon on a vote of the society the resolution was unanimously adopted.

Pres. Cushman: We will now proceed with the regular business of the session.

Mr. Harrison: I intended to propose a question for the consideration of the society. I notice in the daily papers that the hunting clubs are going before the legislature to have some action taken for the protection of rabbits. At least they will demand to have a law which will prevent the hunting of rabbits with ferrets. We are great sufferers by the rabbits. We as horticulturists and nurserymen are opposed to this rabbit legislation. One of our neighbors had a fine block of standard pears and the rabbits ruined them. Every orchardist knows that rabbits are a damage to us. I think the farmers should not be required to raise rabbits for the pleasure hunting of the city sportsmen. I am opposed to



it and I think we should memorialize the legislature not to protect the rabbits.

Pres. Cushman: I do not think there will be a dissenting voice among us on this proposition of Mr. Harrison. I would suggest that you offer a resolution to that effect. I think we should also memorialize the institute workers to help in this matter.

Mr. Harrison: I offer it as a motion then that we memorialize the legislature against the protection of rabbits.

N. H. Albaugh: I second the motion that we memorialize the state legislature, urging the non-protection of the cotton-tail in the state of Ohio.

Pres. Cushman: You have heard the motion, are there any remarks on the motion? If you are ready we will vote on the question.

Thereupon by a vote of the society, the motion was adopted.

Pres. Cushman: Are there any other questions that you desire to take up now? If so we are ready to hear them.

Mr. Montgomery: I would like to ask in regard to the Williams Favorite peach.

Mr. Wiley: I can answer that. We have it and we consider it a very fine thing. It is a cling.

N. H. Albaugh: How do you find the flavor of this peach?

Mr. Wiley: It is as finely flavored as any peach we have.

Mr. Harrison: It was introduced as Williams Favorite. We have grown the tree for a number of years. Some claim that it is a profitable peach to raise. It is a cling peach and the right name for it is Williams Favorite.

Mr. Aultfather: In regard to the subject of rabbits and rabbit legislation I want to ask a question. I buy varnish to protect my trees from rabbits but a neighbor of mine who found that rabbits were peeling his, went out and painted his trees with common oil. It did not injure the trees in the least and the next year it was more easily done. It was done this way for several years and it did not hurt the trees.

Mr. Carr: What kind of trees were in this orchard?

Mr. Aultfather: They were apple, peach, pear and plum trees.

Mr. Montgomery: I noticed that some one recommended as a cherry, the Montmorency Large and my information was that the Ordinary Montmorency is better. I want to ask which cherry is the better of the two.

Mr. Farnsworth: It is known as the Ordinarie but it is a large cherry. I tried to ascertain definitely in regard to this while I was in New York. I think they recommend the Ordinarie. It is a large fruit.

Mr. Harrison: I think the Ordinarie Montmorency is about the size of the early Richmond. It bears about harvest and they are large. It bears very well at least all that any tree ought to bear. If I was going to order the varieties spoken of I would order the Large.

Mr. Farnsworth: The variety that I have is large and it ripens unevenly. Mr. Willard told me that the cherry that I had been growing was grown there as the Montmorency Ordinarie. I might be mistaken about this however, but that is my impression about it.

Mr. Harrison: I think the fruit is about the size of the Early Richmond but is not so good.

Mr. Farnsworth: How do they compare in season?

Mr. Harrison: I think they both ripen at the same time.

Mr. Carr: I would like to ask Mr. Harrison if these trees are not late in bearing. Is it not a fact that they are ten or fifteen years old before they begin to bear much? My experience with it is that it is a very large cherry and it is very late. It ripens unevenly and it is twelve or fifteen years old before they bear enough to pay for themselves. For this reason I do not feel like championing them, and I have kept shy of them.

Mr. Farnsworth: I think you must have Olivet.

Mr. Albaugh: The Montmorency in the Miami Valley bears a large cherry and bears well. Several years ago when cherry trees were a drug on the market we let them go in the nurseries and they would be full of cherries and they bore as young as the Early Richmond. We picked bushels of cherries before the trees got out of the nurseries.

Mr. Harrison: I want to say on this point that my Early Richmond which were planted at the same time have not given me half as much fruit.

Mr. Whitney: We also grow Richmond and Montmorency and we find that the Montmorency Large will grow 25 per cent. better on sandy soil and will be 50 per cent. more productive in sand soil than on clay soil. We have been having fruit for ten years. We find that the Montmorency is the most profitable of any cherry. On the clay soil they ripen unevenly and are subject to insects. They are more highly colored on sandy soil. We find the early Richmond killed while the Montmorency escapes. That is our reason for thinking they are the best for good soil.

N. H. Albaugh: Cherries should never be planted on poor soil.

Mr. Courtright: I would like to ask in regard to a cherry that is later than the Montmorency. The market demands a cherry that is later. I want to get a good late cherry and I should be glad to know if there is any member here who can recommend such a cherry.

N. H. Albaugh: I want to say that the English Morello is a good tree in the orchard. It is a fruit bearer and is a money maker.

Mr. Miller: I have a block of fifty trees which have not made as much growth as the Montmorency. They however ripen later and are a finer canning cherry. The trees however grow unsatisfactory and do not make a good union with the stock of the tree. I consider it one of the best cherries because of its late ripening.

Member: What kind of soil have you?

Mr. Miller: It is a sandy soil.

Mr. Aultfather: I have 11 English Morello trees about 11 years old and they have borne 4 or 5 good crops. The cherries from these trees are engaged ahead of picking and have been for years. I have never sold them for less than \$3.00 per bushel.

Member: What kind of soil have you?

Mr. Aultfather: It is clay and sand.

Mr. Harrison: I do not know of any cherry as late in ripening as the English Morello unless it be the Wragg which is said to be as good or even better. This will do well in good soil, gravel or sandy soil.

N. H. Albaugh: Have you discovered any material difference in growth between the English Morello and the Wragg, I got it from Iowa? It grew for many years. The English Morello grows well and bears well and the Wragg does the same thing. I could not see much difference between them.

Mr. Sweet: I would like to ask about the cultivation of the cherry trees.

N. H. Albaugh: Cherries can get along without cultivation the best of any fruit. They bear as well in sod ground as under cultivation.

Mr. Farnsworth: I cultivate my sour cherries and grow the sweet ones and May Dukes in sod.

Pres. Cushman: We will now hear from Mr. Miller on the question, "Is spraying alone sufficient protection for the Codling Moth?"

Mr. Miller: In answer to this question I want to say that I am not at all satisfied with the result of my efforts to control this pest by spraying. I have followed the instructions of the Spray bulletins sent out by the experiment stations, but the results are far from satisfactory. This year I think 75 per cent. of the apples in my orchard were injured by Codling Moth. Nor am I in this respect much better off than my neighbors who did not spray at all. It would seem that the same zeal and energy on the part of our scientific investigators which has been given to the San Jose scale and other insects which only threaten future injury, if given toward finding an effectual remedy for this greatest of all orchard pests, would be a boon to the orchardists of to-day. This seems to me to be the most important problem now confronting the horticulturist.

Member: How did you prepare your Bordeaux mixture for spraying?

Mr. Miller: I used what we call a four pound solution. That is four pounds of copper sulphate, and four pounds or more of lime to fifty gallons of water, adding four ounces of Paris Green to that amount of liquid. This year I used White Arsenic instead of Paris Green. It is a little trouble to prepare it, as it has to be boiled with common washing soda for about fifteen minutes, but it is cheaper than Paris Green, is fully as effectual, and remains in suspension much better.

Member: How strong did you make it?

Miller: I made it according to the formula sent out by the experiment station, about the same amount by weight as Paris Green.

Mr. Harrison: I do not know that it is proper for us to get up and denounce what our professors have said. I have an orchard and it has been bearing for 11 years. They had it sprayed for two years. My neighbor has an orchard across the road. I pasture the cows in my orchard and my neighbor pastures sheep. He has less scab and less Codling Moth than I have. I think this year he had three good apples to my one. At least 75 per cent. of my apples were bad. What is the matter? My neighbor never sprayed with anything. What have sheep to do with the scab? He has not had near the scab that I have.

Member: How do the ages of the orchards compare?

Mr. Harrison: His is a young orchard.

Member: What kind of soil has he?

Mr. Harrison: It is a sandy soil.

Prof. Lazenby: I think Mr. Miller is a little behind in literature. He is more familiar with the literature on Curculio. I can remember back 20 years and we always had the subject of Codling Moth for discussion at every meeting. In Western New York they spent more time on this than on any other subject. I do not want to take much time, but let me relate what was accomplished in a district of the fruit-bearing region of Michigan. It is a good fruit growing section surrounded by water. A large area of this peninsula is planted with trees. 75 per cent. of the apples were wormy. The farmers resolved to do something. At that time one remedy was bandaging the tree. This club resolved to bandage every tree on the island and they did it at the expense of the club. In a few years they had no wormy apples. I know the results were extremely gratifying. Prof. Cook was the first man to advocate spraying. He thought spraying would be cheaper. The practice of bandaging the trees has been given up. I am sorry if these trees were thoroughly sprayed that he does not get better results.

Prof. Webster: I want to say in regard to Mr. Miller's criticism, that is what the entomologist is for. If I attempted to protect every orchard I would have an elephant on my hands. It is probable that he killed the Codling Moth that he raises but his neighbor also raises them. As for Mr. Harrison I would say that the Codling Moth have it in for the nurserymen. He called my attention to this last season.

Mr. Johnson: The great trouble with Mr. Miller is that he does not spray thoroughly. I am inclined to think we do not begin soon enough and keep it up. Prof. Green had charge of my Belmonts one year and I had the only crop I have ever had. I only had a barrel before and I had 62 barrels of these apples that fall, and they were all fine apples. I favor spraying if it is done right and if not, it is of no account.

Pres. Cushman: I have the pleasure of introducing the director general of the Ohio Centennial Exposition, Hon. D. J. Ryan.

D. J. Ryan: Gentlemen of the State Horticultural Society. I am here to represent the Centennial Commission and to get you to take an interest in it and co-operate with us. It is two and one half years off but we should begin now to do the work. There is no better agency than your society. It is the purpose of the Commission to make it greater than any exposition since the World's Fair at Chicago. It has large grounds. 300 or 400 men are at work there now. Appropriations are made by the Congress and by the State legislature and the requisite amount has been raised by Toledo to place the necessary buildings there. One of the most beautiful exhibits and center of attraction will be the Horticultural Building with its various departments. The Congress of the United States has declared that this is to be an international exposition and has appropriated \$300,000 upon the condition that a certain amount be raised and we are within one hundred thousand dollars of it now. We have from public resources alone about two million dollars and there will be other sources of income to be added to this amount. We will raise two millions of dollars. Situated as we are within an area of 250 miles, on which there are 15 millions of people, you can readily see that this exposition will have a great influence on the country. This exposition is incidently held to celebrate the admission of Ohio into the Union and also the formation of the North-west Territory out of which so many great states have been carved. I think without being egotistic it is safe to say that within this area may be found the very best indications of human progress that can be found any place on the globe. (Applause.) It has more railroads than any similar area in the United States.

It pays more money in the form of wages than any similar area. It has more good schools and more churches than any similar size and extent. When you think of the great states of Ohio, and Illinois and Michigan and Minnesota, you are thinking of the garden spot of the world. Here you find the great agricultural interests of this country, here you find the men who have made it so. We shall depend largely for the success of the exposition upon the farmers. I heard the manager of the Omaha Exposition say that the gate receipts amounted to nothing until they opened the stock department. Men, women and children love to see stock. Our board want to have three great departments. They will be the Agricultural, embracing Horticultural of course, the Educational, and the Mining interests. The Mine Inspector of Michigan says we will have a finer display at Toledo than they had at Chicago. Our board feels that the Agricultural Department should be one of the great departments of the exposition. We are not going to spend much money on the foolish shows such as the Midways. We want to have a better and finer educational tribute to the progress of our people.

When we are holding an exposition in an area that shows greater progress than any other portion of this country, we think that it is highly proper to commemorate it in such a way that it will be a lasting benefit to our people. We want to do it in such a way as to inspire all the people. We expect you to take an active interest in this exposition. We will furnish you the means to make the exhibit. I see that last year you appointed a Centennial Committee and I trust that you will either continue that Committee or appoint another one. We are not going to leave the beautifying of the grounds altogether to the architects but we want you to meet with us and to make some suggestions. We want to get your ideas about it. I remember when Ohio was preparing to place her exhibit at Chicago we called in Mr. Ohmer and Mr. Albaugh but we did not have time enough to do the work properly. We want you people to come together with us and help us to make a creditable display as against our brethren of Illinois and Michigan. I thank you for your courtesy and I trust that we shall co-operate to make the Ohio Exposition of 1902 of lasting benefit to the people of this country.

N. H. Albaugh: Allow me to say that we are all glad to meet friend Ryan. As he said in regard to our exhibit at Chicago, that is true. Even late as it was and unknown as the committee was, we did succeed in the Chicago exposition, in compelling Pres. Higginbottom to take down the saloon-keeper that he had placed at the head of the agricultural department and put a sober man in his place. (Applause.) I fully agree with Mr. Ryan that action should be taken by this society, to make its mark felt in that great and grand exposition, which is to be held in our own state. Let us begin at once in this great work. We have a chance to accomplish a great deal in this coming exposition if we take hold of the matter in earnest.

N. Ohmer: One of the principal reasons why Ohio was not properly represented at Chicago was because we did not prepare for the exhibit the year before the exposition. Other states went to work in good time and they were prepared to make a showing. Our place was kept for us but we did not avail ourselves of the opportunity. Let us go right to work now and we can make an exhibit of which we need not be ashamed.

Pres. Cushman: Is there anything further to be said on this subject? I am sure that this society is ready to do anything that will make the Horticultural Department at the Ohio Centennial what it should be. We will now listen to a paper on the "Chemical and Mechanical Analyses of Ohio Soils," by Prof. Selby.

## SOME RESULTS OF THE MECHANICAL AND CHEMICAL ANALYSES OF OHIO SOIL.

By A. D. SELBY.

Chemist, Ohio Experiment Station.

I have given this title simply as a basis for presenting some work recently done in the Chemical Department of the Ohio Experiment Station upon soil samples. The samples have been taken from soils subjected to other tests by the station in the course of its work. They include soils and subsoils from the farm of the Ohio State University, Columbus, Franklin county; from East farm and South farm of the Experiment station, Wooster, Wayne county; from the north-eastern sub-station lands at Strongsville, Cuyahoga county; the northwestern sub-station farm at Neapolis, Fulton county; and from the farm of Mr. William Miller at Gypsum, Ottawa county.

Since the divers soils are very different in character it has appeared to me that the results of these analyses, either chemical or mechanical, in most cases of both kinds, would be of some interest to you. And if they seem to discredit certain prevalent notions as to the real character of certain soils in the state, notably about those often referred to as "stiff clay soil," "hard clay soil" and the like, I can only present the facts as we find them and say that they were as much of a surprise to the writer, at the outset, as they may now appear to you. If we have arrived at the true state of facts, as there is good reason for believing, then it might seem proper to revise certain previous judgments in the light of these facts.

### MEANING OF MECHANICAL AND CHEMICAL SOIL ANALYSIS.

By the mechanical analysis of a soil is meant the various soil particles classified as to their size. You all know how much more rapidly coarse sand will settle in water, than will the very fine sand; likewise for how very long clay will remain suspended in the same medium. Further this clay has one composition, being made up largely of silica and alumina, a silicate of alumina in fact, with certain possible amounts of iron, besides carrying a very large proportion of the potash, soda, lime, magnesia and phosphoric acid of an arable soil. True clay or Koalinite, exclusive of water, contains more than fifty-three per cent. of silica. The sand on the other hand contains little except silica and adherent iron. Rated between sand and clay there is a class of particles called silt; the silts remain suspended in water many hours and yet separate out in advance of the clay. They are, when properly separated, somewhat intermediate between sand and clay, containing somewhat of plant food but relatively very much less than the clay. All these particles of the soils named are separated, classified, and their amounts stated in percentages of the air dry soil.

In making these mechanical analyses the size of the particles of sand is determined by passing the sand through sieves and bolting cloth, while the finer particles of silt and clay are measured under the microscope.

By the chemical analysis of a soil is meant that after being dissolved as far as possible in hydrochloric acid of a given strength, the insoluble matter remains behind, while the soluble constituents pass into solution. The insoluble matter, with a little soluble silica, make up the soil filler, or body usually, 70 to 90 per cent. of the whole, while the soluble part, varying from 5 to 30 per cent. of the soil, contains all the plant food elements. These include potash, lime, magnesia, iron, phosphorus, sulfur and some nitrogen, and taken with the organic nitrogen in humus, and the oxygen and hydrogen in water, constitute the 10 chemical elements reckoned as the food of plants. Soda, while found in soils, is not essential as a plant food.

### ANALYSES OF SOILS OF NORTHWESTERN SUBSTATION FARM, NEAPOLIS, OHIO.

Mechanical (Average)	Soil	Sub-Soil	Chemical (Average)	Soil	Sub-Soil
Fine gravel, (2—1 mm.)...	0.00	0.00	Insoluble matter { .....	91.85	93.56
Coarse sand, (1—.5 mm.)...	0.66	0.64	Soluble silica { .....		
Medium sand (.5—.25 mm.)...	2.17	1.85	Potash ( $K_2O$ ) .....	.048	.050
Fine sand, (.25—.1 mm.)...	32.60	30.93	Soda ( $Na_2O$ ) .....	.065	.070
Very fine sand (.1—.05 mm.)...	51.60	56.09	Lime ( $CaO$ ) .....	.090	.075
			Magnesia ( $MgO$ ) .....	.095	.125
Total sand .....	87.03	89.51	Manganese oxid ( $MnO$ ) .....		
			Ferric oxid ( $Fe_2O_3$ ) .....	.770	1.075
Silt (.05—.01 mm.) .....	1.93	1.52	Alumina ( $Al_2O_3$ ) .....	.880	1.790
Fine silt (.01—.005 mm.)...	3.36	2.95	Phos. pentoxid, ( $P_2O_5$ ) .....	.115	.105
Clay (.005—.0001 mm.) .....	1.26	2.53	Sulfur trioxid ( $SO_2$ ) .....	.03	.015
			Carbon dioxid ( $CO_2$ ) .....		
Total mineral matter .....	93.58	96.51	Water and organic matter .....	5.60	3.535
Moisture, loss at 100° C. ....	4.11	.93	Total .....	99.543	100.405
Loss on ignition .....	4.49	2.58			
Total .....	99.20	100.02			

### ANALYSES OF SOILS OF NORTHEASTERN SUBSTATION FARM, STRONGSVILLE, OHIO.

Mechanical (Average)	Soil	Sub-Soil	Chemical (Average)	Soil	Sub-Soil
Fine gravel (2—1 mm.) ....	2.27	1.46	Insoluble matter { .....	85.045	83.953
Coarse sand (1—.5 mm.) ....	2.34	1.83	Soluble silica { .....		
Medium sand (.5—.25 mm.) ....	1.93	1.85	Potash ( $K_2O$ ) .....	.242	.251
Fine sand (.25—.1 mm.) ....	4.31	4.25	Soda ( $Na_2O$ ) .....	.145	.185
Very fine sand (.1—.05 mm.) ....	10.74	9.49	Lime ( $CaO$ ) .....	.22	.205
			Magnesia ( $MgO$ ) .....	.432	.474
Total sand .....	21.59	18.88	Manganese oxid ( $MnO$ ) .....		
			Ferric oxid ( $Fe_2O_3$ ) .....	3.010	3.721
Silt (.05—.01 mm.) .....	23.14	25.59	Alumina ( $Al_2O_3$ ) .....	2.535	3.393
Fine silt (.01—.005 mm.) ....	38.36	33.64	Phos. pentoxid ( $P_2O_5$ ) .....	.161	.145
Clay (.005—.0001 mm.) .....	8.59	15.68	Sulfur trioxid ( $SO_2$ ) .....	.055	.053
			Carbon dioxid ( $CO_2$ ) .....		
Total mineral matter .....	91.68	93.79	Water and organic matter .....	7.937	7.431
Moisture, loss at 100° C. ....	1.94	2.41	Total .....	99.782	99.811
Loss on ignition .....	5.97	4.18			

As will be seen from the chemical and mechanical analyses of the same soils, there is a relation more or less close between the acid soluble constituents and the amount of clay a soil contains. And, on the other hand that making allowance for iron and a small amount of other elements carried by the two grades of silt, the acid insoluble and inert soil constituents accord somewhat with the total of sand and silt found in the soil.



A clay soil is therefore, viewed in this manner, richer potentially, if not actually than a sandy one. It is therefore colder and more difficult to till and generally more resistant to the farmer's efforts to extract from it the good things in its grasp.

The following are the results of the analyses referred to; the analyses were chiefly made by the assistant chemist, Mr. J. W. Ames.

#### ANALYSES OF SOILS OF STATION EAST FARM, WOOSTER, OHIO.

Mechanical (Average)	Soil	Sub-Soil	Chemical (Average)	Soil	Sub-Soil
Fine gravel (2—1 mm.)....	.56	1.27	Insoluble matter { .....	88.713	88.176
Coarse sand (1—.5 mm.)....	.86	1.49	Soluble silica { .....		
Total .....	99.59	100.38	Potash ( $K_2O$ ) .....	.221	.250
Medium sand (.5—.25 mm.)....	.71	.93	Soda ( $Na_2O$ ) .....	.393	.390
Fine sand (.25—.1 mm.)....	1.79	2.35	Lime ( $CaO$ ) .....	.320	.313
Very fine sand (.1—.05 mm.)....	20.47	16.84	Magnesia ( $MgO$ ) .....	.361	.356
Total sand .....	24.39	22.88	Manganese oxid ( $MnO$ ) .....		
Silt (.05—.01 mm.) .....	29.97	32.20	Ferric oxid ( $Fe_2O_3$ ) .....	2.643	2.970
Fine silt (.01—.005 mm.)....	36.07	34.18	Alumina ( $Al_2O_3$ ) .....	2.533	3.013
Clay (.005—.0001 mm.)....	4.74	6.15	Phos. pentoxid ( $P_2O_5$ ) ..	.0797	.0799
Total mineral matter....	95.17	95.41	Sulfur trioxid ( $SO_3$ ) .....	.044	.045
Moisture, loss at 100° C....	.85	1.08	Carbon dioxid ( $CO_2$ ) ....	4.481	4.225
Loss on ignition .....	3.73	3.40	Water and organic matter ..		
Total .....	99.75	99.81	Total .....	99.7887	99.8179

#### ANALYSES OF THE SOILS OF NORTH FIELD, OHIO STATE UNIVERSITY FARM, COLUMBUS, OHIO.

Mechanical (Average)	Soil	Sub-Soil	Chemical (Average) (F. J. Falkenbach)	Soil	Sub-Soil
Fine gravel (2—1 mm.)....	0.86	0.68	Insoluble matter { .....	83.43	83.86
Coarse sand (1—.5 mm.)....	2.17	2.06	Soluble silica { .....		
Medium sand (.5—.25 mm.)....	2.82	2.69	Potash ( $K_2O$ ) .....	0.57	0.56
Fine sand (.25—.1 mm.)....	8.07	8.38	Soda ( $Na_2O$ ) .....	0.74	0.78
Very fine sand (.1—.05 mm.)....	18.47	18.30	Lime ( $CaO$ ) .....	0.56	0.69
Total sand .....	32.39	32.11	Magnesia ( $MgO$ ) .....	0.62	0.63
Silt (.05—.01 mm.) .....	26.18	26.27	Manganese oxid ( $MnO$ ) .....		
Fine silt (.01—.005 mm.)....	28.29	28.91	Ferric oxid ( $Fe_2O_3$ ) .....	3.41	3.63
Clay (.005—.0001 mm.) ....	6.18	7.16	Alumina ( $Al_2O_3$ ) .....	4.86	4.26
Total mineral matter....	93.66	94.35	Phos. pentoxid ( $P_2O_5$ ) ..	0.134	0.152
Moisture, loss at 100° C....	1.11	1.22	Sulfur trioxid ( $SO_3$ ) .....	0.09	0.10
Loss on ignition .....	4.67	4.36	Carbon dioxid ( $CO_2$ ) ....		
Total .....	99.44	99.93	Water and organic matter ..	5.86	5.64
			Total .....	100.274	100.302

**MECHANICAL ANALYSES OF VARIOUS SOILS FROM ORCHARDS OF  
WM. MILLER, GYPSUM, OHIO.**

	No. 1		No. 2		No. 3	
	Soil	Sub-Soil	Soil	Sub-Soil	Soil	Sub-Soil
Fine gravel, (2—1 mm.).....	0.53	0.25	1.03	0.66	0.38	0.16
Coarse sand, (1—.5 mm.)....	1.28	0.66	1.34	1.23	0.88	0.42
Medium sand, (.5—.25 mm.)..	1.52	1.00	1.37	1.40	1.03	0.41
Fine sand, (.25—.1 mm.).....	2.52	2.35	4.66	3.80	2.62	1.08
Very fine sand, (.1—.05 mm)..	4.81	4.59	6.65	5.89	6.34	2.25
Total sand .....	10.66	8.85	15.05	12.98	11.26	4.32
Silt, (.05—.01 mm.).....	20.06	16.73	25.22	23.63	26.17	18.66
Fine silt, (.01—.005 mm.)....	40.25	38.63	35.91	35.92	40.99	43.05
Clay, (.005—.0001 mm.).....	18.92	27.13	14.14	21.25	14.21	27.46
Total mineral matter ....	89.89	91.34	89.32	93.78	92.63	93.49
Moisture, loss at 100° C.....	1.66	1.67	1.77	1.70	1.15	2.32
Loss on ignition .....	8.31	6.99	8.92	5.92	5.96	4.25
Total .....	99.86	100.00	100.01	101.40	99.74	100.06

No. 1, Black soil, North Peach Orchard. No. 2, Lighter soil, North Peach Orchard. No. 3, Light soil from clay area, South Peach Orchard.

It will appear from a study of these results that none of these soils is conspicuous for a high content of true clay, the highest in soil being 18.92 and 14.21 per cent. in Mr. Miller's orchard, with 27.13 and 27.46 per cent. of clay in these respective sub-soils followed by 8.59 per cent of clay in soil at Strongsville and 15.68 in the sub-soil there.

At Wooster there is 4.74 and 6.15 per cent. in soil and sub-soil (East farm), while at Neapolis there is but 1.26 and 2.53 per cent. of clay respectively in soil and sub-soil. Rated by the chief mechanical elements, the soil at Neapolis is sandy, having 87.03 and 89.5 per cent. of sand, respectively, with 5.3 and 4.5 silt. The insoluble matter is 91.85 per cent. and 93.56 per cent. in soil and sub-soil. This soil approaches that of our secretary at Waterville, though less fertile.

All the other soils are more properly silt soils than clay soils, unless we except Mr. Miller's. There is 55.00 per cent. silt in both soil and sub-soil at Columbus; 66.0 and 66.4 per cent. of silt respectively at Wooster, East farm; 61.5 per cent. and 59.2 per cent. of silt at Strongsville and 55 per cent. or more of silt in Mr. Miller's soils. In all cases these silts are double the clays and in Wooster soils more than twelve times the clay amounts. Nor should this surprise us when we think of all these soils as glacial detritus, which they truly are.

Much might be said of the lessons to be drawn with respect to the relation of these soil particles to moisture retention, absorption and so forth, but I would not take the time to-day. When our work at the station is completed it will be published with a fuller discussion. Acknowledgement to the Ohio Agricultural Experiment Station, is cordially rendered for use of the cuts and of the accompanying analytical data.

Prof. Lazenby: What part of the soil did you make your test from?

Prof. Selby: I made it from the first six inches of the soil.

Pres. Cushman: Does it bake?

Prof. Selby: Yes, sir, very hard. It packs first and then bakes, yet it contains only five per cent of clay.

L. B. Pierce: Is a millimeter supposed to be 1-25 of an inch?

Prof. Selby: Yes, roughly speaking it is 1-25 of an inch. That is not exactly correct, but I use it in the rough sense when making my calculation.

Member: What is Silt?

Prof. Selby: It is silicate, or it is the very finest particles of sand.

Mr. Sweet: What is the difference between Silica and Silt?

Prof. Selby: Silica may be Silt. Silt is a general term for fine particles of sand or rock material remaining suspended in water generally speaking from ten to twenty-four hours before settling.

L. B. Pierce: What portion of clay do the potters use?

Prof. Selby: I suppose the potter's clay is 85 per cent clay. Some analyses have made but 67 per cent clay. The nearest approach to true clay in Ohio soils will be found in the limestone districts.

Member: What about making bricks?

Prof. Selby: They make them out of a white oak soil at Wooster. That soil makes good bricks.

Mr. Farnsworth: I have a telegram from Minnesota which I desire to read.

MINNEAPOLIS, MINN., Dec. 6.

*W. W. Farnsworth, Sec'y. Ohio Horticultural Society, Newark, Ohio:*

Minnesota Horticultural society, eight hundred strong, sends heartiest greetings. 10:30 a. m.

A. W. LATHAM, Sec'y.

I also have a letter to read. (Secretary then read a letter from Mr. Brackett, asking for a photograph of the officers of the society, to use in the horticultural exhibit at Paris.)

On motion of L. B. Pierce, the Secretary was ordered to send greetings to the Minnesota Society.

At this point in the meeting a proposition was made to take the photograph of the society, but no action was taken at this time.

Pres. Cushman: We will now hear the Treasurer's report.

## REPORT OF TREASURER.

N. OHMER, TREASURER,

In account with Ohio State Horticultural Society.

Dr.

Date	To Whom Paid	Voucher	Amount
1898			
Dec. 9	A. D. Selby, for services rendered.....	1	\$6 75
Dec. 9	W. W. Farnsworth, for services rendered.....	2	114 16
Dec. 9	W. I. Chamberlain, for services rendered.....	3	5 45
Dec. 9	Wm. Miller, for services rendered.....	4	7 00
Dec. 9	E. M. Woodard, for services rendered.....	5	3 10
Dec. 9	H. H. Aultfather, for services rendered.....	6	8 10
Dec. 9	Herbert Osborn, for services rendered.....	7	9 30
Dec. 9	F. M. Webster, for services rendered.....	8	4 85
Dec. 9	C. H. Waid, for services rendered.....	9	11 30
Dec. 9	C. L. Whitney, for services rendered.....	10	5 35
Dec. 9	A. L. Shirer, for services rendered.....	11	14 65
Dec. 9	W. N. Scarff, for services rendered.....	12	16 75
Dec. 12	N. H. Albaugh, for services rendered.....	13	25 80
Dec. 14	E. H. Cushman, for services rendered.....	14	5 70
Dec. 14	W. W. Farnsworth, for services rendered.....	15	14 50
Dec. 14	J. H. Hale, for services rendered.....	16	64 80
Dec. 14	J. W. Maxwell, for services rendered.....	17	4 00
Dec. 14	E. M. Woodard, for services rendered.....	17	8 50
Dec. 14	F. E. Carr, for services rendered.....	17	8 50
Dec. 14	C. W. Counter, for services rendered.....	17	8 50
Dec. 14	W. W. Farnsworth, for services rendered.....	17	3 00
Dec. 14	R. A. Hunt, for services rendered.....	17	18 00
Dec. 14	J. L. Foote, for services rendered.....	17	1 00
Dec. 14	M. E. Sweet, for services rendered.....	17	3 00
Dec. 14	T. A. Johnson, for services rendered.....	17	12 50
Dec. 14	H. H. Aultfather, for services rendered.....	17	50
Dec. 14	Oscar Dillie, for services rendered.....	17	2 00
Dec. 14	W. C. Sorter, for services rendered.....	17	3 00
Dec. 14	E. H. Cushman, for services rendered.....	17	2 00
Dec. 24	N. Ohmer, for services rendered.....	18	16 00
Dec. 24	W. J. Green, for services rendered.....	19	2 70
1899			
Jan. 17	Barkdull Printing Co., for services rendered.....	20	75 00
Feb. 15	Barkdull Printing Co., for services rendered.....	21	74 00
Mch. 9	Barkdull Printing Co., for services rendered.....	22	89 93
Mch. 9	W. W. Farnsworth, for services rendered.....	23	29 67
Mch. 27	W. W. Farnsworth, for services rendered.....	24	75 00
Apr. 27	Louise Patterson, for services rendered.....	25	79 90
June 2	W. W. Farnsworth, for services rendered.....	26	75 00
Sept. 17	W. W. Farnsworth, for services rendered.....	27	85 24
			\$650 69

## N. OHMER, TREASURER,

1898.	In account with Ohio State Horticultural Society.	Cr.
Dec. 7	Balance on hand.....	\$561 29
" 21	Warrant of State Treasury.....	104 10
Feb. 18	Warrant of State Treasury.....	486 81
Mch. 9	From the Secretary, membership fees.....	163 00
July 21	Warrant on State Treasury.....	349 50
Oct. 21	Warrant on State Treasury.....	85 14
	Total receipts .....	\$1,749 34
	Bills paid amount to.....	995 40
Dec. 4	Balance on hand.....	\$753 94
	Balance due us from State Treasury.....	\$79 05

Dec. 7, 1899.

We, the undersigned, have examined the above report and found it correct in every detail.

J. C. BEAR,  
W. N. SCARFF,  
W. G. FARNSWORTH,  
*Committee.*

N. H. Albaugh: I move the report be accepted and auditing committee be appointed.

Pres. Cushman: I will appoint as auditing committee, J. C. Bear, W. N. Scarff and W. G. Farnsworth.

We will now hear the Secretary's report.

## SECRETARY'S REPORT.

The past season has been a prosperous, though uneventful one for the society.

Most of the old members have been retained on our books and a number of new ones added.

Our report was issued at about the usual time, although delayed by waiting for papers when the author was prevented by sickness, or other reasons, from preparing them for us as early as necessary.

We are obliged to wait for the stenographer to prepare a transcript of our proceedings. This requires from two to three weeks.

Then the secretary has to revise the transcript and revise and arrange the copy, meanwhile writing John Jones to "please send me your paper at earliest convenient date."

Finally, the "copy" goes to the printer, with the exception of two or three papers which have not been received and must either be omitted, or if received before report is finished, they are printed in back part of the volume.

I have troubled you with these details, hoping to impress upon you the necessity of promptly handing in your papers to the secretary.

A number of annoying typographical errors in last Report were due to the fact that the firm who took the contract for the printing sublet the typesetting to another firm with a typesetting machine, who failed to make the changes noted by me when read.

The increasing demand for our Reports from experiment stations, colleges,

Horticultural societies, publishers and private individuals is a gratifying proof of their value.

Many of the papers read at our meetings and published in our reports may not excite as much interest and comment at their time, as does the discussion of simple questions, and yet be of greater value as a record or work of reference.

We should aim to neglect neither the one nor the other.

The Ohio State Horticultural Society is not for the exclusive benefit neither of the Kindergarten nor of the post-graduate classes, but all are entitled and invited to share its benefits alike.

In the absence of a session of the legislature last winter, we could do only preparatory work in regard to insect legislation and also with a view to securing an office for the society in the new State House.

Our work in connection with Ohio's forthcoming Centennial exposition will, I think, bring forth good fruit and add new vigor and life to our organization.

It is an opportunity of rare occurrence and we should make the most of it.

President Cushmah and myself have, during the past year, been in communication with those who have had charge of similar displays at Omaha, Chicago, etc., and have endeavored to secure all the information possible upon the subject.

W. W. Farnsworth: I might say that I still believe we should have an office in the state house for our department. Our department should be on the same footing as any other. We should have an office and a secretary who should devote his whole time to our interests.

On motion of Mr. Albaugh the Secretary's report was adopted.

Pres. Cushman: We will now listen to the report of the committee to secure rooms for the society at the state house.

Prof. Lazenby: We can only make a partial report. The new addition to the state house is far from completion, and will probably not be ready for occupancy until next year. The rooms now occupied by the supreme court will be vacant. There are several rooms that will be vacant. I would prefer the room now used by the supreme court. They have treated us kindly and promised to do anything for us possible. In as much as we receive an appropriation from the state we should have headquarters in the capitol.

Pres. Cushman: We will now proceed to fix the next place of meeting.

Mr. Albaugh in a neat speech invited the society to meet in Troy, Ohio.

Mr. Johnson in a graceful speech invited the society to meet in Port Clinton.

Mr. Farnsworth on behalf of the citizens of Clyde, Ohio, extended a cordial invitation to meet there.

An invitation was also received from Cincinnati, which was signed by the mayor and board of trade.

On motion of Mr. Albaugh a rising vote was taken beginning with the first name presented, which resulted as follows: For Troy eighteen votes, against eight for other places.

Pres. Cushman: I therefore declare Troy as the next meeting place of the association.

Pres. Cushman: We now hear the report of the auditing committee.

We, the undersigned auditing committee, have examined the accounts of N. Ohmer, treasurer of this society, find them correct in every respect.

J. C. BEAR,  
W. N. SCARFF,  
W. G. FARNSWORTH.

On motion the report of the auditing committee was accepted and the committee discharged.

Pres. Cushman: We will now take up the election of officers.

Mr. Sweet: Some of you will remember that I showed myself a year ago and two years ago. I advocated a change of officers in the Horticultural Society, not believing it best to keep the same set of officers in all the time. I sometimes hear that we are running in the same old rut and a change would help us. I want to say that I have not heard a word against any officer, but I think a change will be beneficial. I think a part of the officers should be changed every year and new officers put in their places.

Pres. Cushman: We will now proceed to the election of a President.

The society then proceeded to the election of a President, which resulted in the selection of E. H. Cushman.

Pres. Cushman: Gentlemen, I thank you for the honor you have again bestowed upon me. I can only say, as I have in the past, as far as I am able, I shall do my best to serve you in the capacity chosen. I hope that it is thoroughly understood that my election is the result of no ring.

Pres. Cushman: We will now proceed to the election of a Vice President.

The society then balloted for Vice President, which resulted in the selection of Mr. W. N. Scarff.

Pres. Cushman: It has been the custom for each district to nominate their member for the ad interim committee. Will we take that up now?

Mr. Miller: I think we should take action on re-districting the state. I move that we postpone this matter until tomorrow morning, and that a committee of three be appointed of whom the President shall be one, to meet and go over this matter.

N. H. Albaugh: Has the state been jerrymandered? Is there any good reason for making a change?

Prof. Lazenby: I seconded the motion for the purpose of bringing

it before the society. There is a proposition to have the local societies represented on the ad interim committee. It is the only feasible way of bringing the local societies in touch with us. This has been done in many states. I would be glad to see the election postponed until the matter could be looked into.

Pres. Cushman: Before considering this matter any further we will proceed in the election of officers. We will next take up the election of Secretary.

The society then proceeded to the election of Secretary, which resulted in the selection of W. W. Farnsworth.

W. W. Farnsworth: Friends, I thank you for this expression of your confidence in me. I assure you that it shall be my ambition to serve you faithfully. I shall ask that you be free to offer any suggestion that will aid me in my work for the society.

Prof. Lazenby: I move that the Secretary be authorized to cast the ballot of this society for N. Ohmer as Treasurer. Carried. Thereupon the Secretary cast the ballot of the society for N. Ohmer as Treasurer.

Mr. Ohmer: I certainly thank you for the honor you have conferred upon me. I have been a member of the association for forty years and an officer of the association for about the same length of time. I sometimes think you have done too much for me. I thank you again for the honor conferred upon me.

N. H. Albaugh: The motion of Mr. Miller looks to the union of local societies and the state societies through ad interim committees. There are some parts of the state where there are successful horticulturists. In one case there are four adjoining counties in which there are live societies. If you appoint officers from them you would have four members of the ad interim committee located together. It is the purpose of this committee to make observations all over the state and come up here and report. If you carry out this plan you will prevent some parts of the state from having any officers. This state has been divided fairly into ten districts. I never heard any cause for complaint from any one. I cannot see any advantage it would be to redistrict the state. This work was carefully done at Canton. There are sections of the state where there are no societies and they would not be represented. If there is anything wrong in any district let us adjust that district and make it right. Every part of the state should be represented in this society so that the value of the funds we get from the state will be fairly distributed.

Mr. Shirer: I came here with the full intention of not saying a word. I despise to see my name in the proceedings of the meeting. I want to keep in the background. The redistricting of the state is certainly not legal because some of the counties are left out. When I studied geography there were 88 counties in the state, but there are only



'83 on this list. I do not know why they are ruled out. That is "taxation without representation."

Mr. Miller: With the consent of my second, I will change my motion to appoint a committee of five, making the President and Secretary two members of the committee to consider this matter. Carried.

Pres. Cushman: The motion having prevailed, the following gentlemen will constitute the committee for the consideration of redistricting the state; committee,

E. H. Cushman,  
W. W. Farnsworth,  
F. E. Carr,

N. H. Albaugh,  
W. J. Green.

NOTE—The following report by Prof. Weber should have immediately preceded the discussion of Mr. Miller.

Pres. Cushman: We will now listen to Prof. Webster.

#### REPORT OF COMMITTEE ON ENTOMOLOGY.

BY F. M. WEBSTER.

Some of the most interesting observations of the past year have been such as relate to the effects of the very low temperature of last winter on insect life in Ohio, where the temperature ranged from 10° to 30° below zero, and, in some instances, did not rise above zero for several days. In some cases, notably the red and black spotted lady beetle, the Soldier beetles, Canker worm and Tent Caterpillar, White grub, Hessian fly and wheat midge, we know they were little affected, because of their excessive abundance the past summer. The San José scale, *Aspidiotus perniciosus*, also seems to have survived remarkably well through a temperature of 32° below zero. So far as I have been able to observe, but two insects have suffered, permanently, from this cause: one, the White Peach scale, known also as the West India scale, *Dyaspidiotus amygdali*, and the Harlequin cabbage bug, *Murgantia histrionica*. The former withstood a temperature of 9° below in 1897. Though many individuals perished, enough survived to carry the insect over, but last winter, with a temperature of 23° below, proved too much and all succumbed. The Harlequin cabbage bug did not fare so well in 1897, as it has not since been observed about Wooster, but in southern Ohio, last year, it ruined acres of cabbage. This year, hardly an individual is to be found in southern Ohio, and as it has few natural enemies, there seems no doubt but that the temperature of 18° to 32° below, which is known to have prevailed where it occurred, was too much for it to withstand. I might say in this connection, that, except to southern insects, low temperature is not as likely to be fatal as the sudden and repeated fluctuations from warm to very cold. Severe frosts in late spring sometimes nearly, or quite, exterminate some species of insects over considerable sections of country. We must not, however, lose sight of the fact that this meteorological element is like a two-edged sword and cuts both ways, and that its effects are the same on beneficial insects as on the injurious. At times, I have felt almost sure that the sudden uprising of some of our destructive insects was due to the fact that existing meteorological conditions were such that their natural enemies had become so reduced in numbers as to remove the principal restraining elements that usually hold them in check. The inter-relations between the weather and insect life is a big subject, far too broad to admit of extended discussion in a report like this. Again, along the

lake shore in orchards affected by the San José scale, there were, last fall, great numbers of the little black lady beetles, *C. misella*, which are known to prey upon it. While the severe winter probably killed many of the scale, it also killed off the beetles, so that the problem this spring was relatively in about the same condition that it was last year.

Of the destructive insects but a single new one has appeared, and this not in sufficient numbers to attract attention. I refer to the Pea louse, *Nectarophora destructor*, Johns., MS. This has caused great destruction to growing peas along the Atlantic coast during the past summer. It also appeared in Canada and I found it, October 14, on Canada field peas, on the premises of W. W. Farnsworth, Waterville, and it occurred on the same variety of peas on the Station grounds at Wooster. In the latter case it was overcome by the attacks of a parasitic fungus, *Entomophthora aphides*, as determined for me by Dr. Thaxter, of Cambridge, Massachusetts. To what extent, if at all, this pest will occur another year I am not now able to say. It attacks all varieties of peas, including the ornamental sweet pea.

Of the experimental work carried on during the past year I will only mention the most important. The attempt was again made to find some way of killing the Rose beetle, *Macrodactylus subspinosus*, without injuring the plants upon which it might be feeding. A mixture of whale oil soap proved effective, especially as against the females, but this would only kill those actually wetted, and offered no further protection to the plants from further visitations. Where breaking up the breeding grounds is not practicable we have, as yet, no better means of relief than the planting out of baits to attract the beetles and destroying them there.

The Grape root-worm, *Fidia viticida*, contrary to my hopes, has not yet been checked by its natural enemies, but, on the contrary, has increased in numbers and spread eastward from about Cleveland as far, at least, as Perry, Lake county. In the vicinity of Little Mountain it has worked serious injuries during the past year. Up to the present year I did not know that this pest had worked its way further east than near Willoughby.

Last June I sent Mr. Mally to Euclid to test some additional measures, and among them the application of arsenate of lead, for the destruction of the beetles. This insecticide has been used by the Gypsy Moth Commission in Massachusetts with good results. Although our own experiments were carried out rather late in the season for the particular species of insects we hoped to destroy, Mr. Mally was quite elated over the success of spraying with the arsenate of lead for the destruction of the beetles. Some time afterward I visited the premises where the experiment was made, and, so far as I could observe, there was nothing to indicate that this insecticide will not prove entirely effective. The expense of this remedy will be, for material, not to exceed \$1.00 per acre, and a single application, which will need to be a carefully applied and thorough one, will be all that will be necessary. No new appliances will be needed, but the upper surface of the leaves of the grapes must be carefully sprayed, and a geared sprayer *will not* do the work. There must be a hand at every nozzle, and the mixture must be applied from above, or nearly so, downward.

In various sections of Ohio, onion culture has come to be quite an extensive industry. In Wayne county alone there were some 400 or 500 acres grown the present year, while Hardin and Lake counties have also large onion fields. During seasons of drought, the crop is seriously ravaged by a minute insect known as "Thrips," *Thrips tabaci* Lindem., and the effects of its ravages are known as "White Blast." This is an enemy of tobacco in Europe, and it feeds upon a great variety of plants in this country, but its injury seems to be here chiefly confined to the onion. During July of the present year this pest made its ap-

pearance in the onion fields of Wayne county, and there came a call from the growers for help. Considerable experimental work was done, with the result that it was learned that a mixture of one pound of fish-oil soap, dissolved in eight gallons of water, produced a thoroughly effective spray. One pound of this soap to twelve gallons of water proved effective, where the insects were drenched, but this was not found as reliable and efficient as the stronger solution, costing about one-half cent per gallon. When the onion growers came to us, they declared that unless we could contrive some way of destroying the pest they would have to give up onion culture, and so far as can now be seen, they will next year be in a position to protect themselves.

As I stated at the commencement of this report, the Hessian fly has been very destructive this year, both in the spring and early fall. Early sown wheat has suffered severely, while that sown very late has escaped serious fall attack. For some reason not known to me, the flies were abroad and deposited eggs about ten days later than usual. Some weeks ago Dr. James Fletcher, Entomologist of the Dominion of Canada, stated to me that he had been able to demonstrate that this pest was single brooded in Manitoba. Though geographically distant, this offers substantial proof of the correctness of statements made in my previous writings on this point, to the effect that a variation in time of oviposition, in Ohio and southward, corresponding to the latitude, would necessarily imply a single brood to the far north. Thus, observations made in Manitoba show the practical value and economic importance of this work in Ohio, and that wheat must be sown later and later as we proceed southward in this state, to escape the fly.

The Asparagus beetle, *Crioceris asparagi*, has pushed its way westward as far as Sandusky. Another asparagus beetle, *C. 12-punctatus*, became established in the east, some years ago, and began to follow in the wake of the former species in its westward march. I was not a little surprised to learn, quite recently, that the latter species had overtaken the former, and both are now found together in Ontario, across the Niagara river from New York. *C. 12-punctatus* may be expected in northeastern Ohio at any time.

At the annual meeting of the Entomological Society of Ontario, Canada, which met in London, October 11 and 12, Mr. John Dearness showed specimens of the San José scale on the following plants:

Carrot, Watermelon, Poison ivy (*Rhus toxicodendron*); Mulberry (*Morus sp.*) *Viburnum opulus*; Blue beech (*Carpinus Americanus*); Squash and potato-tuber.

Inoculations on the above by Mr. John Gordon, Guilds P. O., Ontario, not long enough on the hosts to mature, but long enough for the secreted scale to darken in color.—

Phlox (garden) *Hemerocallis*; Hemp (*Cannabis sativa*); Pitchforks (*Bidens sp.*); Rhubarb (*Rheum sp.*); Burdock (*Arctium lappa*); Horse radish; *Nasturtium armoracius*; Erect door-weed (*Polygonum erectum*); Hedge mustard (*Sisymbrium officinale*); Turtle Head (*Chelone glabra*); Nettle (*Urtica gracilis*); Impatiens (*Impatiens sp.*); *Crisium arvense*.

Mature females on all the above from phlox.

Basswood (*Tilia Americana*); Elm (*Ulmus sp.*); Nine-bark (*Physocarpus opulifolius*); Willow (*Salix*, two species); Sumach (*Rhus nyphina*); Balsam poplar (*Populus balsamifera*); Wild currant (*Ribes sp.*); White ash (*Fraxinus Americana*); Fleabane (*Erigeron canadense*); Motherwort (*Leonurus cardiaca*); Vervain (*Verbena hastata*); Lady's thumb (*Polygonum persicaria*); *Cryptotaenia Canadense*.

Mature females on all the above.

Potato stems; Chicory (*Chicona cntybus*); Sour-dock (*Rumex crispus*); Raspberry (*Rubus villosus*).

Scale settled but not mature.

Owing to a lack of funds, I have not followed this pest during the last two years, but I can say, however, that new areas of infestation have been reported and we know very well that some, at least, of the older ones are becoming every year more extended. Without funds or authority, I think you will agree with me that it will be better to use my energies in solving other problems that will, at least, be more encouraging to me, and fully as profitable to you. That is to say that we have learned all that is practically necessary regarding this pest, and it now remains to apply this knowledge. There are some scientific points yet to clear up, but these belong more to the laboratory than to the field; and as under present conditions it is not possible to take up suppression or control, it is better for me to work on other problems and restrict San José scale work to its more technical aspects.

Pres. Cushman: The paper of Prof. Webster is now open for discussion.

N. H. Albaugh: The allusion to national protection should remind us that within the past two days the Canadian Parliament has passed laws preventing any importation of stock from the United States. So far as the United States is concerned, we have no restrictive legislation, but I think there is a tendency now to pass national restriction laws through the national congress more than ever before. Then these foreign countries cannot unload their surplusage within the borders of Ohio. This shows how badly we need protection by legislation.

Pres. Cushman: The society will now stand adjourned until Friday morning at 9 a. m.

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#### THURSDAY EVENING, DECEMBER 7, 1899.

Pres. Cushman: The convention will now be in order and we will proceed to the regular work of the program. The first thing on the program will be a paper by Prof. Lazenby on the subject of "Will it Pay Fruit Growers to Keep Bees?" I have the pleasure of introducing Prof. Lazenby.

#### WILL IT PAY THE FRUIT GROWER TO KEEP HONEY BEES?

WILLIAM R. LAZENBY.

To what extent the pollination of the blossoms of our more common cultivated fruits is dependent upon the honey bee is a question of practical interest to every horticulturist.

During each spring for several years past a series of observations bearing on this question have been made by the Horticultural Department of the Ohio State University and the result of these observations may be briefly summarized as follows:

The apricot, which is frequently planted in sheltered positions having a warm exposure, is usually the first fruit tree to blossom in central Ohio and honey bees have occasionally been seen working quite freely upon these trees as early as April 1. Some years, however, it is as late as April 20 before the blossoms appear. Closely following the apricot are some of our early blooming plums, and where

different varieties of this fruit are grown the period of blossoming is quite extended. For example, during the past season in our university garden, plum trees were visited by honey bees from April 15 until May 10, inclusive, a period of twenty-five days. Japanese plums being the first, and some of the European varieties the latest in blooming. This length of period is only possible where several distinct varieties or groups of plums are grown. For any one variety or group, the season is much shorter. The pollen collecting and honey gathering period is rarely more than five or six days for an individual tree. If two or three days of this time are cloudy, rainy or windy, the chances of pollination are lessened.

Pears and peaches soon follow the apricots and the earliest plums, and these, in turn, are closely followed by the cherries, the early sweet being first, and the early sour a little later. Apples come into bloom last among our common tree fruits, but their period of blooming, as a class, is somewhat longer than that of the peach, plum or cherry.

Arranging the fruits grown in this latitude according to the date of blossoming, beginning with the earliest, the sequence would be apricots, plums, sweet cherries, sour cherries, pears, peaches, apples, quinces.

Arranging them according to the frequency of the visitation of the honey bees, the sequence would be plums, cherries, apples, peaches, pears, and this is based upon the collection of pollen rather than honey. In the way of honey production I would place apples first, then cherries, plums, peaches, pears.

The following tabulations show the activity of bees at certain periods, the comparative number collecting pollen and honey, the approximate number of flowers visited, the weight of bees and the weights of the loads of honey and pollen that were carried at certain dates:

TABLE I.—*Number of bees leaving and returning to hive at different intervals, and number collecting pollen and honey, May 3, 1899—plum and cherry trees in height of bloom.*

Time	Number of Hive	Outgoing Workers		Returning Workers.			
		Number Leaving in 30 min.	Number per minute.	Number Returned in 30 min.	Number per minute.	Loaded with pollen.	Loaded with honey.
8:30 to 9:00 A. M. ....	1	1050	35.0	900	30.0	640	260
	2	1206	40.2	930	31.0	626	304
11:30 to 12:30 M. ....	1	1200	40.0	1248	41.6	240	1008
	2	1452	48.4	1542	51.4	178	1354
2:30 to 3:00 P. M. ....	1	2340	78.0	2424	80.8	75	2349
	2	2530	84.3	2862	95.4	57	2865

*May 6th, apple trees in full bloom.*

8:30 to 9:00 A. M. ....	1	696	23.2	702	23.4	164	538
	2	1140	38.0	825	27.5	606	219

It should be noted that in no instance were the bees counted as pollen-laden unless an appreciable amount of pollen could be seen in the pollen baskets.

Careful and repeated observations made on different days and different hours of the day, when our fruit plants are in bloom, have clearly shown that when the weather is pleasant, and bees numerous, a very large per cent. of the flowers of some of our fruit plants are visited by one or more bees. In every case coming under my own observation, I found plums and cherries visited the most frequently of the tree fruits. Although peaches have a very showy and apparently attractive flower, and the pear blossom a marked odor, bees do not visit them in anything like the number that they do the plum and cherry. Apples are visited more freely than pears and peaches, but not so freely as plums or cherries.

Bees do not appear to be attracted by the flowers of the common garden currant, but with the gooseberry they seem a little more familiar. Raspberries and blackberries are visited freely, especially the red raspberry. During a single favorable hour I have seen nearly every blossom on an average sized stool of a Turner raspberry visited or touched by bees.

Strawberries are infrequently visited by bees. Upon several occasions I have carefully observed good sized strawberry plantations when in bloom, and can count on my fingers the bees I have actually seen in contact with the flowers. They are often seen flying over the strawberry plants, appearing to have been attracted by the early and rather showy flowers, but they rarely alight upon them, at least on our own grounds.

During the height of the strawberry bloom I have seen dozens of bees upon the flowers of the weeds that were among the strawberry plants, but seldom one on the flowers of the strawberry.

If I were to mark the different common fruit plants on a scale of ten, showing the comparative number of flowers of each visited by honey bees, as observed on our own grounds and under essentially the same conditions, the grading would be as follows:

Red Raspberry, 9.5.	Blackcap Raspberry, 8.	Pear, 3.
Blackberry, 9.	Apple, 6.	Currant, 2.
Plum, 9.	Gooseberry, 4.5.	Strawberry, 1.
Cherry, 8.5.	Peach, 3.5.	

On the morning of May 17th, between the hours of 8:30 and 9:30, sixteen bees were caught singly as they came from the hive and were immediately killed by means of a cyanide bottle. Each bee was weighed separately, and the results are given in the following table.

TABLE II.—*Giving weights of outgoing bees.*

No.	Grams.	No.	Grams.
1 .....	.092	9 .....	.083
2 .....	.071	10 .....	.071
3 .....	.075	11 .....	.075
4 .....	.075	12 .....	.075
5 .....	.078	13 .....	.073
6 .....	.083	14 .....	.081
7 .....	.078	15 .....	.087
8 .....	.091	16 .....	.081
Total weight .....1.267 grams.		Average weight ..... .079 grams.	

It will be seen that the lightest bee weighed .071 of a gram and the heaviest .092 of a gram. The average of the sixteen weighed is .079 of a gram, or 1.219 grains. According to this average, it would require in round numbers 5,750 bees to weigh a pound. A prosperous colony of 30,000 workers would weigh, at this rate, about five and one-fifth pounds.

On the morning of May 19th, between the hours of 8:30 and 9:00, sixteen bees were caught singly as they entered the hive. None were taken except those that bore evidence of being honey collectors. These bees were immediately killed and weighed separately as before. The results are shown in the following table:

TABLE III.—*Giving weights of honey-collecting bees.*

No.	Grams.	No.	Grams.
1 .....	.122	9 .....	.073
2 .....	.083	10 .....	.066
3 .....	.116	11 .....	.081
4 .....	.085	12 .....	.123
5 .....	.105	13 .....	.066
6 .....	.100	14 .....	.096
7 .....	.082	15 .....	.062
8 .....	.114	16 .....	.078
Total weight .....	1.511 grams.	Average weight .....	.078

It is shown by the table that the honey-loads of bees are quite variable, and it is probable that their efficiency as honey-collectors is like the efficiency of men as money-makers, some accumulating great stores while others, apparently as industrious, have little or nothing to show for their labor.

If we take the average weight of the out-going bee, .079 of a gram, and deduct this from the heaviest honey laden bee, the weight of which is .122 of a gram, we have a difference of .043 of a gram. This means that a bee that is an energetic and capable honey-collector returns to the hive considerably more than one-half heavier than when it begins its collecting trip.

Deducting the average weight of the out-going bee, .079 of a gram, from the average weight of the incoming honey-laden bee, .094 of a gram, leaves .022 of a gram as the normal or average weight of the honey load. This is 27 per cent. of the average weight of a bee, or a little more than one-fourth of its own weight.

On May 26th, between the hours of 8:30 and 9:00 a. m., twelve pollen-laden bees were taken just as they were entering the hive. Their individual weights were as follows:

TABLE IV.—*Giving weights of pollen-laden bees.*

No.	Grams.	No.	Grams.
1 .....	.091	7 .....	.080
2 .....	.091	8 .....	.092
3 .....	.077	9 .....	.091
4 .....	.081	10 .....	.080
5 .....	.098	11 .....	.081
6 .....	.075	12 .....	.079
Total weight .....	1.019 grams.	Average weight .....	.085 grams.

Taking the average weight of the out-going bee, which we found to be .079 of a gram, and deducting this from the pollen-laden bee, we have .006 of a gram as the average weight of a load of pollen. This is about 7.5 per cent. of the average weight of the bee.

Taking the average weight from the weight of the heaviest laden bee and we find that the pollen weighs something over 16 per cent. of the weight of the normal bee. In other words, a bee may carry about one-sixth of its weight of pollen, although the average load is only about 7.5 per cent of the average weight.

The statement is frequently made that bees collect honey and pollen at the same time. My observation leads me to believe that this is not the case. I have killed scores of pollen-bearing bees, just as they are entering the hive and have never found one loaded with more honey than one is likely to find in any worker bee when it leaves the hive. The bee acts upon the maxim that "a little provender hinders no man," and almost invariably takes a lunch, or carries a small supply of food when starting out on a collecting trip. Although the pollen-gatherers, as we have seen, do the light carry work of the hive, I am firmly convinced that they are of equal if not greater, service in the work of pollination than the honey-gatherers.

Painstaking counting under many different circumstances show that for the same time, and speaking with reference to our common fruit plants, the pollen-gatherer visits from three to five times as many flowers in a given time as the honey-collector, and I am thoroughly convinced that all honey-feeding and collecting and also all pollen gathering insects do us a great service when our fruit plants are in bloom.

The observations I have briefly recorded, while not important in themselves, may stimulate others to investigations of equal interest and profit to apiarians and horticulturists.

Pres. Cushman: We will now be favored by some music from the Glee Club.

Pres. Cushman: I now have the pleasure of introducing Mr. E. L. Shuey, of Dayton, Ohio, who will speak on the subject of "Home Beautifying." Mr. Shuey is connected with the National Cash Register Company and has given the subject a great deal of thought and study. I am sure that you will be delighted with his treatment of the subject.

#### HOME BEAUTIFYING.

MR. E. L. SHUEY.

*Mr. President and Ladies and Gentlemen:* I must acknowledge to considerable diffidence in undertaking to speak on this occasion before this society of students and professional workers, for I am only a layman in all classes of horticulture. My experience has been executive rather than professional. Nevertheless, it is a subject that is full of interest to me as it is to you and it has given me a great deal of pleasure to do what I could in helping to make homes beautiful. The idea of the National Cash Register Company and those who have joined in this work is that if we do anything that will make home surroundings comfortable and attractive, it will be a great aid in making the happiness of the home more complete, and we believe that those who live even in the humblest and smallest houses can do something that will be of value to the community, and to the life of this world if they assist in this worthy enterprise.

There is no theory whatever in the address which I shall give to-night, and



which will be illustrated by stereopticon views, but it is simply the story of an actual development growing out of a small beginning. This has been brought about in a few years by being properly directed, and by the use of the simplest and plainest methods. The originators of the plan, recognizing that they had no expert knowledge, but only business ideas and a purpose to make the neighborhood beautiful, called in people who knew something about these things to help them plan it.

The story briefly told is this: Those who are familiar with the city of Dayton, know that the south side of the city embraced a section which was called "Slidertown." It was considered the most undesirable part of the city, because of its unkept streets and houses and its uncontrolled youth. It was anything but an attractive part of the city, yet it was not the worst place in the world by any means. Twelve years ago the factory of the National Cash Register Company located in the very heart of this section, and began the manufacture of its products.

For five or six years the owners of this factory went on, as owners of factories generally do, making money and spending as little as possible, having no more regard for the happiness or success of the people whom they found there than other employers usually have. After a time they made up their minds to turn the whole plan about. They began a series of changes and improvements for the neighborhood, which have made the National Cash Register Company a world wide name. The striking thing about the whole matter is that a factory should be the moving spirit in this country, in a thoroughly rational and clearly defined plan for the beautifying of workmen's homes, whether in towns, cities or villages. It was not the professional artist, not the student, but the active business man who found the idea that has helped many a city all over this land. It is a significant fact that the American Park and Out Door Art Association has this year appointed a committee to develop this idea of beautifying simple homes in manufacturing districts of towns and villages. Methods are being adopted for improving homes everywhere, believing that if the proper influence can be brought to bear to change the surroundings of the homes, these very changes will in a short time, have their effect upon the life and character of the people within. The experience of these five years prove that this idea is right and that vines and flowers do much toward elevating the character, and adding to the happiness of the home. The gentlemen who started this movement builded better than they knew. They have done more for the world than they dreamed of; and yet this is only a part of the broad system of careful work, which has been done step by step, for the improvement of their own people and for the life of the city in which the factory is located. The story you will understand better as you see the pictures thrown upon the screen. (Here followed about one hundred and fifty pictures showing the method of instruction and results of the work in South Park. The outline of explanation that accompany them follows.)

The purpose of the work done was to change unkept roads and yards into attractive streets and homes, to overcome nuisances both public and private, and to instruct in the simple principles of gardening.

This was accomplished first, by organizing the South Park Improvement Association, a society composed of the residents of South Park, having for its purpose the union of effort in directing the work to be done within this section of the city.

The second method was that of teaching in the schools, Sunday-schools, clubs and other organizations connected with the factory and neighborhood the principal rules of planting: A, preserving open lawn centers; B, plant in masses; C, avoid straight lines. The children and their parents alike soon came to know that landscape gardening is the planning and laying out of grounds, large or small, with the special view to the most beautiful effects. To encourage the

application of these rules, packages of seeds and thousands of roots of vines were distributed among the members of the Sunday-schools, boys' and girls' clubs and the Women's Guild. While learning these rules, the principles were illustrated by pictures of good planting and beautiful homes in many places.

The third method was by example, begun in the improvement of the factory grounds themselves. These were cleared up and laid out simply but effectively. No tropical plants were used, and only such shrubbery was planted as could be easily cultivated in this climate. How beautiful the results were is to be seen in the fact that these grounds have served as a model for scores of factories throughout the world.

The fourth and most extensive means was the offering of prizes, amounting to \$250.00 a year, for the best front yards, the best back yards, best examples of vine planting, the best window boxes and for the best boys' gardens. The determination of the prizes is not a question of size or quantity, but of taste and care in following principles.

It has frequently happened, as seen in the pictures, that some of the smallest homes have won the first prizes. The boys' gardens were arranged upon ground belonging to officers of the company, and instruction was given by the company's gardener.

The results of these efforts are seen in one of the prettiest suburbs in this country, one of the most striking in its individuality, and one of the most industrious sections in the city. The influence is felt among young and old alike, and no protection is necessary for preserving the flowers and plants, for boys and girls as well as men and women, are all interested in the beauty of the neighborhood. K street, composed entirely of working people's homes, is said to be perhaps the most beautiful workingman's street in all the country.

The influence of these efforts has extended beyond the limits of the neighborhood. Not only has the entire city felt the effect, but beyond the city, in other cities and villages, and even in country homes, this spirit of improvement has extended.

These facts lead one to ask why more farmers' homes are not made more tasteful and beautiful, as is done here, with the common shrubbery, much of which can be found in the fields and woods about the farmer's home. It is hoped that these ideas will be put into practice in many country districts as well as in our cities and towns, and that the results of these efforts will be felt in hundreds of places where, thus far, nothing has been done.

Pres. Cushman: I am sure that we have all been delighted with the address by Mr. Shuey. The discussion of this subject will be opened by Mr. L. B. Pierce.

#### DISCUSSION.

L. B. Pierce: I did not fully realize what I had to follow when I was asked to open the discussion. I saw something about it in the magazines, but I did not know that it was so grand. You know all things come to those who wait. It is not quite 20 years ago since I heard a nurseryman say that he was proud of the fact that he did not know anything about landscape gardening. Certain pictures in the lecture show how much we improve our lives. He has shown us that all that is beautiful is within reach of the humblest person. We may surround ourselves with beautiful pictures and beautiful things and that we

may have these things as well as any other person. I can only say, after such a beautiful picture lecture, that I have seen many homes that are not kept as in this picture. I know of many homes, especially in the country, where there is no attempt at artistic effect. Many of these homes are better located than homes in the city, because they have hills which can be made very beautiful in the way of scenery. I think the farmers do not take hold of this matter like the city people. The people in the city have a good example from those who have done this planting. These beautiful homes are object lessons for them to follow. The public parks are also object lessons for the instruction of the people. The main reason they can do this better than the farmer is because they have leisure. The market gardener gets up early and goes to bed late. The farmer gets up at four in the morning and his work lasts through the day. The laborers in the factories go to work at seven o'clock. The office men and the clerks go to work at eight o'clock. The bankers and men of that class do not go to work until nine o'clock. This work is different from their office work. I hope this leaven will spread, and that we shall have great improvements in the country homes. They can be made more beautiful than the city homes. We can get better trees and they will not be killed by the smoke and dust. The evergreen up in my country is the prettiest in the winter.

F. E. Carr: I think these pictures we have seen on the canvass tonight are better than a lecture a mile long. They bring the thing home to us. No description would convey as much as these pictures. I have had occasion to speak of ornamental planting, but I could not bring it before the people as you can with those pictures. I think this is the practical way to present it to the people. The thing that particularly interested me in those views was those showing the grouping of shrubs. Most of you have room for these things. If the farmer can not have a beautiful home, who can? He has the room and everything about him. Yet, as a rule, we find less artistic taste in his home than elsewhere. When I mention the subject to many, they say they can not do it. They always associate home beautifying with a big order to the nurseryman. They do not need it any more than these people. You can do it with shrubs from the woods. If you can find shrubs that bloom, so much the better. We can carry that plan out without buying any stock. Another point is, you can get something for winter, especially for country places. There is no massing of shrubbery so handsome as that sloping towards the water's edge. The lecture has been an inspiration to me and I am sure if we apply it in our own homes we shall all be benefitted by it.

Mr. Ohmer: Not many months ago I met Mr. Patterson in his office. This work came up in the conversation. He said, "Your horticultural society sowed the seed in Dayton. Twenty years ago you spoke of the work. It was slow work, but now you see the effect of it.

I would not have thought of this if I had not seen it in your reports." I want to say this is my first visit to Newark. This afternoon we went to the old fair ground. I noticed quite a population in that direction, respectable grounds and houses—scarcely anything but houses and grass and fences. My advice is to arrange a horticultural society and conduct it on the social principle. Meet once a month and have a good time and a good dinner. We have had a society for 32 years, meeting every month and discussing these subjects. Get together and beautify your homes.

N. H. Albaugh: One picture was shown on the screen that shows what can be done. When the word came to our society what they proposed to do with the old fair ground, we sent a remonstrance against it and the trees and the hill was saved.

Mr. Farnsworth: One feature of the lecture was especially pleasing to me. I find too often that when people begin to beautify their homes they spend all their money on the front yard. I was glad to see money spent on the back yard. I always think, when I see such a front yard, that the man cares more for the good opinion of his neighbors than for his family. Farmers sometimes have machinery or a pile of rubbish, lumber, etc., but it need not be in plain view every day. We sometimes fail to appreciate these paintings of nature and its effect upon children. You may take them to Sunday school and teach them good things, and spoil its effect by your surroundings at home. I am glad to see that these people do not neglect the back yard.

Mr. Sweet: I want to return my thanks to the gentlemen for the feast we have had. I live in the woods. I am a kind of a wild man. I am entirely surrounded by forest.

Mr. Aultfather: One thing I want to mention in this lecture, and that is the union between the manufacturer and the laborer. I have no doubt it makes the love of home greater, and creates a better feeling between labor and capital. I think it is one of the best things to introduce in our towns where labor is employed.

Mr. Wiley: I think the gentleman said something about the influence of example. A young man in our town set about doing something in the way of art. In less than six months three or four neighbors were doing the same thing. Mr. Pierce said farmers do not have time, yet there is a good deal of time he can use if he will take it in the morning before breakfast.

L. B. Pierce: Suppose he has twenty cows to milk.

Mr. Wiley: Then he can spend some time after dinner. I think any man can find time to attend to these things.

Mr. Shuey: I think young men sometimes come to the city because it is more attractive than the country. I want to see you make the farm attractive so the young men will stay there. I think it pays.

even if you do take a little time from your work. There is a better life on the farm than in the town.

Mr. Carr: I saw in New England many farms abandoned and I found by inquiring that the boys had gone to the city, and when they are not able to rent the place any longer they abandon it. There are places sold at ridiculous prices. Farmers do not improve their homes as they might, and I believe that is one reason why young men and women do not want to remain in the country. If we do not have the time to do these things let us take the time.

Mr. Miller: I think the most impressive lesson, as shown by the pictures, would be the effect upon the lives of these boys. Instead of our cities becoming nurseries for crime, I can see by this system you would send back sensible boys to take the place of the boys leaving the farm.

John Pierce: I have raised three boys who have farms. The first two I intended to be farmers, and the third I sent to college. He went to an academy to teach, but after a few years came back to the farm.

Prof. Lazenby: In some of this discussion we have not been quite fair to the farmers. There are attractive places in the city, but I do not think the boys are driven off the farm from lack of shrubbery. I know the surroundings of homes are not always the best, but they are better than the city. You speak of the attractiveness of the city, but if you take a portion of the country and compare it with the city you will find it as attractive. If you compare them socially and morally I think you will find the country fully equal to the city. I think Mr. Miller is right in saying if the boys in the city are interested in planting they will go back to the country. We cannot stop boys from going to the city. The society features are considered so much better. That drives boys into the city. I think you will find boys there who will want to go out of the city. What makes this picture attractive? Do you ever stop to think? It is because we see a humble home. We like it very much. Another place where more money is expected is not so attractive to us. It is because the former place leaves a pleasing picture to us. The one place leaves a pleasing picture, while the other, though more elegant and costly, does not make the same impression. We do not recall it with the same pleasing memory at all. I would have you beautify your homes. If you can do it by vines, do so, but at any rate make it so that it will produce a pleasing impression on the mind.

A. Shirer: The question may arise, why not go to work and do it? We have enough pictures and agricultural papers on the subject. Why, they all preach this same story, and ask it to be done. I do not care just how you place the flower bushes. I do not care for the open space of so many inches. I do not like to see every yard just alike. It looks too much like imitation. Do not imitate somebody else. I hope we are so far removed from the monkey species as not to imitate others.

Pres. Cushman: I had a little different feeling of these pictures shown here tonight. The first thought that I had was that I wished my boy was here. Perhaps the next thought was a little more on the side of dollars and cents, and I wondered if it were possible to hire some of those boys. They would be better help than we are obliged to use under ordinary circumstances. The third thought that I had was that this company, these men and women engaged in that work, are building characters far more beautiful and useful, and getting nearer heaven, than any other education they might give them. If anyone in this country deserves to have their efforts upheld, it is these people who are doing this great work at Dayton. It has produced an impression on my mind that I think I will never forget. This lecture is so good, that it deserves to be spread over this whole country. I hope that every horticulturist here will do all in his power to carry out these ideas and aid in making our homes more beautiful and more attractive.

N. Ohmer: Mr. President, we will all accept your remarks, and I am sure that we have all been highly benefitted by the address. I move that we extend a vote of thanks to Mr. Shuey for this lecture tonight.

On motion of the society a vote of thanks was tendered to Mr. E. H. Shuey.

Pres. Cushman: This convention will now stand adjourned until 9 a. m. tomorrow.

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#### FRIDAY MORNING, DECEMBER 8, 1899.

Pres. Cushman: The convention will come to order, and we will proceed with the regular program. We had a committee appointed yesterday evening who were to meet and discuss the matter of redistricting the state. We are now ready to hear that report.

Prof. Green will make the report.

Prof. Green: Mr. President and gentlemen of the convention: Your committee appointed to investigate and report upon the desirability and advisability of changing the ad interim districts beg leave to report that no reason appears to exist for redistricting the state. The suggestion made by Mr. Shirer, that delegates from local societies take the place of ad interim committeemen does not seem to be practicable.

Respectfully submitted,

E. H. CUSHMAN,  
W. J. GREEN,  
N. H. ALBAUGH,  
F. E. CARR.

Committee.

Pres. Cushman: You have heard the report of the committee; what is your pleasure?

On motion the report of the committee was adopted.

Pres. Cushman: We will now take up the election of the ad interim committees. The Secretary will call the roll of the districts, and as each district is called we will proceed to the nomination and election of an ad interim committeeman for that district.

Thereupon, the Secretary called the roll, and the following gentlemen were nominated and declared elected by Pres. Cushman:

1st district.....	W. G. Farnsworth.
2nd " .....	N. H. Albaugh.
3rd " .....	A. Shirer.
4th " .....	W. H. Owen.
5th " .....	R. J. Tussing.
6th " .....	E. G. Cox.
7th " .....	F. E. Carr.
8th " .....	L. B. Pierce.
9th " .....	E. H. Brawley.
10th " .....	C. L. Whitney.

Mr. Farnsworth: We have a report here from the Portage county Horticultural Society. Shall I read this report to the convention?

Pres. Cushman: I think if we establish such a precedent we would have a dozen reports to read. That would take much valuable time, and I would not favor it.

N. Ohmer: We used to call for reports from local societies, but we have not been doing it for some time.

Prof. Selby: I move that the secretary be authorized to incorporate all local reports in the proceedings of this meeting.

Adopted.

Mr. Farnsworth: I am sure no one would enjoy these local reports more than I would, but we are very busy and there are many topics here which have not yet been taken up for discussion. We must discriminate somewhere.

Pres. Cushman: We will now hear the report of the committee on exhibits of flowers. Mr. Carr is the chairman of that committee.

#### REPORT OF COMMITTEE ON PLANTS.

Best display Carnations, first premium, Mr. Imlay, of Zanesville; second premium, Mr. Counter, of Toledo.

Best display of cut flowers, first premium, Mr. Imlay, of Zanesville; second premium, Mr. Counter, of Toledo.

Specimen of house plants, Mr. Montgomery. No display of house plants. Display of roses not worthy of a prize.

F. E. CARR,  
J. J. HARRISON,  
T. S. JOHNSON,  
Awarding Committee.

On motion of Mr. Albaugh the report was accepted.

Pres. Cushman: We will now hear the report of the committee on vegetables.

R. J. Tussing: Our secretary will make the report for this committee.

#### REPORT OF COMMITTEE ON VEGETABLES.

Best display of vegetables, first premium, E. M. Woodard.

Best display of celery, first premium, C. W. Counter.

Best and largest collection of potatoes, first premium, C. W. Montgomery; second premium, E. M. Woodard.

Mr. M. M. Miesse, of Lancaster, Ohio, has on exhibition a very fine display of green house lettuce of the *Grand Rapid Type*.

R. J. TUSSING,  
D. M. TEETER,  
H. H. AULTFATHER,  
Awarding Committee.

On motion, the report of the committee was accepted.

Pres. Cushman: We will now hear the report of the committee on fruits. Prof. Green will report for this committee.

The committee on fruit begs leave to offer the following report:

#### REPORT OF COMMITTEE ON FRUITS.

Rome Beautiy, first premium, M. E. Sweet; Rome Beauty, second premium, E. G. Cox.

Baldwin, first premium, T. S. Johnson; Baldwin, second premium, M. E. Sweet.

Belmont, first premium, T. S. Johnson; Belmont, second premium, T. Kislingbury.

Ben Davis, first premium, F. H. Ballou; Ben Davis, second premium, F. P. Vergon.

Weaver Sweet, first premium, T. Kislingbury.

Grime's Golden, first premium, T. S. Johnson; Grime's Golden, second premium, M. E. Sweet.

Jonathan, first premium, T. S. Johnson; Jonathan, second premium, A. D. Seward.

N. Spy, first premium, T. S. Johnson; N. Spy, second premium, M. E. Sweet.

Peck's Pleasant, first premium, T. S. Johnson.

Rambo, first premium, T. S. Johnson.

Red Canada, first premium, M. E. Sweet; second premium, T. S. Johnson.

R. I. Greening, first premium, T. S. Johnson; second premium, M. E. Sweet.

Roxbury Russet, first premium, T. S. Johnson; second premium, T. Kislingbury.

Stark, first premium, Gatton Bros.; second premium, F. P. Vergon.

Winesap, first premium, Gatton Bros.; second premium, J. P. Streeper.

York Imperial, first premium, J. C. Bear; second premium, T. Kislingbury.

Best plate of apples for market, for southern Ohio, first premium, F. H. Ballou; second premium, F. P. Vergon.

Best plate of apples for market, for northern Ohio, first premium, T. S. Johnson; second premium, F. P. Vergon.



Best plate of apples, dessert qualities to rule, first premium, T. S. Johnson; second premium, M. E. Sweet.

Best plate of pears, market qualities to rule, first premium, C. W. Counter; second premium, A. D. Stewart.

Best plate of grapes, dessert qualities to rule, first premium, E. M. Woodard.

Display of pears, first premium, E. M. Woodard.

Display of grapes, first premium, E. M. Woodard.

Display of apples, first premium, T. S. Johnson; second premium, A. D. Seward.

Plate of apples for name, by M. M. Miesse, Paradise Winter Sweet.

Plate of apples for name, by J. C. Wright, Smith's Cider and another, unknown, variety.

A plate of apples by N. C. Marion, for identification, could not be named.

S. H. Hurst exhibited a red apple, highly colored, and of good quality; name unknown.

W. J. GREEN,  
WM. MILLER,  
OLIVER THOMAS,  
Committee.

On motion of Mr. Carr, the report of the committee was accepted.

Pres. Cushman: We will next take up the report of the committee on the state fair premium list. Mr. Woodward will make the report for that committee.

Mr. Woodward: Gentlemen, your committees have held two or three meetings, but we are not yet ready to report. There is considerable dissatisfaction among the vegetable growers, and we are trying to arrange a report that will be satisfactory.

N. H. Albaugh: I move the committee be continued.

And by a vote of the society this committee was continued.

Pres. Cushman: Are there any other committees to report? If so, we are ready to hear them.

Mr. Shirer: Is there not a memorial committee?

Pres. Cushman: We will hear a report from the memorial committee.

Mr. Pierce: I will have to give the president away. I asked him who the committee was, and he said he did not know. However, I will say that there is no work for this committee to do.

N. H. Albaugh: If nobody has died, how can they report?

A. Shirer: They can report them all alive.

Prof. Lazenby: I want to say something about our last memorial report. The American Pomological Society thought we had not paid a proper tribute to our late president, Mr. Campbell. I was sorry to say that it is true. They wanted to know why we had done this. He had labored so long with us and we paid him so little tribute. I simply mention this as a suggestion for our future benefit. Nobody was to blame for it. It was, perhaps, an omission, but I was sorry it occurred.

Pres. Cushman: I appointed a special committee (page 7, Report

for 1898) consisting of Messrs. Aldrich, Ohmer and Moore, to prepare a memorial for Mr. Campbell. The committee reported, and it was accepted and published as it is here.

Pres. Cushman: It would appear that the criticism of the gentlemen in the east was deserved. We may not be able to fix the responsibility, but it is to be regretted that the facts are as they are. I do not know that we should take much time in this matter. The sooner we drop it, perhaps, the better. We will now listen to the report of our librarian, Prof. W. J. Green.

Mr. Green: We thought last year we could not get a complete file of our reports, but Mr. Ohmer volunteered to give us his reports. He sent them to me and they are in good condition. We have all of the state reports, but some of the earlier Pomological society reports we do not have. I came away before the time of the meeting and could not bring reports from other states with me. I would like you to have the reports of Illinois, Missouri and Michigan. I have them on hand, and they are yours for use. We have quite a call for our reports from experiment stations. We furnished the New York experiment station with a set, also the Missouri Botanical Garden, and we have a complete set of their reports. We have exchanges with Illinois, Indiana, Missouri and New York, and perhaps we can exchange with others. There has been quite a call for our reports, and our surplus has been reduced very much.

Mr. Farnsworth: While on the subject of reports, I will say that when Mr. Campbell sent me the back volumes, I made a complete set, took it to a binding establishment in Toledo and it burned down before they were returned, so that we lost it. I had a set bound for my own use that is nearly complete.

Prof. Selby: Is authorization needed to give the librarian power to bind these reports?

Prof. Green: I think that power is implied in the action already taken.

Pres. Cushman: I would like to say that in not reappointing Mr. Green as librarian, it is understood that he will serve until his successor is appointed. I said nothing about it, and you will serve until a change is necessary. We will now listen to Prof. Green's paper on "Varieties of Plums and Classification."

#### VARIETIES OF PLUMS AND CLASSIFICATION.

By W. J. GREEN.

The following classification does not include all species of plums, because the subject is treated from a horticultural rather than from a botanical standpoint. Some species do not contain varieties of any special interest and are omitted for this reason. The various groups mentioned are characterized with sufficient fullness to answer the purpose intended, merely.

The list of the varieties is incomplete, also, for the reason that it is not deemed wise to do more than to present those which are of interest horticulturally. The real purpose of the paper is to give a sort of resume of the best known varieties, and to place them in groups so as to show their relationship.

#### THE DOMESTIC GROUP.

This group comprises the well-known European plums, and is the best known of all the groups, and, at present, is the most important of all. All of the varieties are susceptible to black-knot and shot-hole fungus, and many are particularly liable to the fruit rot, and all are liable to curculio attacks. There is some difference in varieties as regards hardiness, but nearly all should be classed as only half hardy in this latitude.

**BRADSHAW.** Tree vigorous, healthy and quite prolific, but does not begin bearing at so early an age as many other varieties. The fruit is large, purplish red, of good quality and ripens early in the season, or about two weeks before the Lombard. It can be recommended as a safe variety to plant.

**COE'S GOLDEN DROP.** Rather slow in growth, but quite prolific and reliable, although it may not ripen fully in all parts of the state every season.

The fruit is large and of excellent quality.

**CZAR.** Not fully tested here, but reported as not sufficiently hardy. It is earlier than Bradshaw, but not as large.

**GRAND DUKE.** Tree a moderate grower and should be top-worked on some vigorous variety. It is rather slow in coming into bearing, but seems to be sufficiently prolific. The fruit is very large and attractive in appearance. It is one of the latest in ripening, and will, most likely, prove valuable for both home use and market.

**GERMAN PRUNE.** Slow in growth, but quite fruitful. The fruit is large, dark purple and of good quality. Not equal to the Italian prune, or Fellenburg, in size.

**GUEIL.** A medium-sized, dark purple variety, ripening at mid-season. A vigorous grower and quite prolific, but much inclined to rot.

It is a good market variety, and has been extensively planted in this state.

**LINCOLN.** Tree sprawling in habit and slow in growth, but fairly prolific.

The fruit is large, copper-colored, ripens early, even before the Bradshaw, and is of good quality, but not very firm. If top-worked it may prove to be a valuable variety.

**MOORE'S ARCTIC.** A very hardy variety, having given crops here when most others were winter-killed. The fruit is small and cannot compete in the market with larger varieties.

**MURDY.** Closely resembles Pond's Seedling, although of distinct origin. In just what respects it is superior to the parent variety does not appear.

**PRINCE OF WALES.** A vigorous variety, with dark green foliage; fruit medium to large, ripening at mid-season. Its time of ripening is not in its favor, otherwise, it is worthy of commendation.

**REINE CLAUDE DE BAVAY.** Sometimes written Bavay, but more often Reine Claude. A very prolific, highly flavored, greenish yellow variety, ripening after mid-season. It is one of the best, both for home use and for market.

**SPAULDING.** About equal to Reine Claude in quality, but ripens earlier, and comes in competition with many other equally good sorts.

It is not curculio proof, as has been claimed.

**YELLOW EGG.** A large, yellow variety, of low quality, and considerably inclined to rot. Its appearance commends it for market, and for canning it is excellent.

## THE AMERICANA GROUP.

The plums of this group are natives of northern United States and of Canada, hence are very hardy. The trees are vigorous, with large, thick, dark green leaves. The fruit is firm, with a thick, tough skin, dull in color, but usually of high quality. In common with other native sorts the foliage is subject to a disease known as plum pockets. Black knot, shot-hole fungus and fruit rot do not trouble them seriously, but trees of this group often suffer from a mysterious twig blight. They are not exempt from curculio attacks, but suffer less than European sorts.

**AMERICAN EAGLE.** A very vigorous and prolific variety, of good quality, but with some acidity at the skin and stone. The fruit is of medium size and ripens at mid-season. Better for home use than for market.

**CHAMPION.** One of the largest and latest of the class. Rather dull in color, but sweet and with little acidity of the skin. Likely to prove valuable for market because of late ripening.

**COLORADO QUEEN.** Rather small, but of such excellent quality as to make it desirable for home use.

**HAWKEYE.** The largest plum of the group which has been planted here, often nearly one and one-half inches in diameter. Rather dull in color, but of good quality. It is desirable for home use, and may prove profitable, in a small way, for market.

**WOLF.** A very prolific freestone, ripening in mid-season. Reliable, but inclined to overbear.

**WEAVER.** Medium to large and of good quality. It hangs on the tree better than most varieties of this class, and, although dull in color, may prove profitable for market. For home use it is desirable.

## THE MINER GROUP.

Trees of this group resemble those of the Americana class so closely that it seems hardly worth while to separate them. The group is considered as intermediate between the Americana and Wild Goose groups.

**MINER.** Fruit medium to large, dull in color, but of excellent quality. Can be recommended for home use.

**PRAIRIE FLOWER.** Tree vigorous and prolific; fruit medium to large, of good quality, but little acidity of skin and stone.

For canning, this variety is unexcelled, and will, most likely, prove to be a profitable market sort.

## THE WILD GOOSE GROUP.

Although more southern in habitat than the Americana class, the varieties of the Wild Goose class have proved hardy here. The varieties are mostly strong in growth and very fruitful. The fruit is thin-skinned, and juicy, often watery, not of high quality, but often highly colored and very beautiful, hence meets with ready sale, but usually at a lower price than European sorts. It would be easy to overdo the planting of varieties of this class.

**CHOPTANK.** A little later in ripening than the Wild Goose, and a good variety to plant for a succession. The fruit is very bright and attractive in appearance and of good quality. A very promising variety.

**MILTON.** Somewhat like Wild Goose in habit of growth, but fruit a little larger and ripens a little earlier.

**POOLE'S PRIDE.** More vigorous in growth, later and larger than Wild Goose, and superior to that variety in quality. Excellent, both for home use and market.

**WILD GOOSE.** A well-known variety, and highly esteemed in some localities. It is low in quality, but its reliability makes it desirable to plant in sections where the plum crop is uncertain.

#### THE WAYLAND GROUP.

This was formerly included in the Wild Goose group, but differs, principally, in more showy foliage, in some cases bearing a close resemblance to the Osage Orange, while the fruit is firmer and less watery.

Some of the varieties are very ornamental in both foliage and fruit.

**GOLDEN BEAUTY.** A beautiful and prolific plum and of good quality, when eaten raw, but very acid when cooked.

**MOREMAN.** Of medium size, bright red, late in ripening, not always reaching maturity in this latitude. Useful chiefly for ornamental purposes and for jelly.

**REED.** One of the best of the class. Very prolific, and begins to bear at an early age. It makes a fine, ornamental tree, and the fruit is unsurpassed for jelly.

**SUCKER STATE.** Nearly as good as Reed, but not quite as attractive in appearance.

#### THE CHICKASAW GROUP.

Rather dwarfer and more spreading than the Wild Goose type. The twigs are zigzag in habit of growth, the fruit is juicy, often stringy, and usually not of high quality.

**NEWMAN.** One of the best of the class, and may be ranked as desirable, although there are many better varieties, in other groups, ripening at the same time.

**POTTAWATTAMIE.** Very prolific, medium size, ripening soon after Wild Goose. It is too much inclined to overbear, and is usually small in consequence.

**YELLOW TRANSPARENT.** Tree vigorous in growth, forming a handsome head. Fruit of medium size and of good quality, but cracks badly.

#### THE TRIFLORA GROUP OR JAPANESE PLUMS.

Although but recently introduced, this group is quite well known to fruit growers. The trees are mostly robust and very prolific. The fruit is usually highly colored and of good quality. It is quite subject to rot, and is not exempt from curculio attacks. Most varieties must be classed as only half hardy, having suffered more here from the cold than European varieties. The habit of early blooming is characteristic of the group.

**ABUNDANCE.** One of the most valuable of the Japanese sorts, and because of good quality is well adapted to the home garden. While not as prolific as some others, it gives profitable crops for market. It is not, however, equal to some of the best European varieties. It is simply a good variety; not the best, as some have been led to believe.

**BURBANK.** A remarkable variety, as regards prolificacy and habit of early fruiting. When properly thinned, the fruit is large, well colored and of good quality. Its liability to rot detracts from its value, and for this reason it might not be safely planted on a large scale. It has not proved quite as hardy here as Abundance and Red June.

**CHABOT.** Later and hardier than Burbank, but not as prolific nor as highly colored. It ripens at mid-season and comes in competition with many other good varieties, but is worthy of trial.

**HALE.** Although large enough, our tree has not borne a crop, because of winter injury of buds.

**KERR.** A very early yellow variety, of fair size and medium quality. It ripens a little before Red June and Wild Goose, and for this reason has some value, but if its season were two weeks later it would have little to commend it.

OGON. Another yellow sort, of about the same season of ripening as the Kerr. It seems to be only fairly prolific and is low in quality, but owing to firm flesh is well adapted to canning.

RED JUNE. Because of earliness, hardness and beauty this is a valuable market sort. It may not be too much to claim for it the highest rank among Japanese sorts. It is doubtful if we have a better early variety in any class.

### DISCUSSION.

L. B. Pierce: Do you know anything about the Lincoln?

Prof. Green: Yes, it is a sloe, but not as good as some of the others I named. It is given the name Lincoln, without the party knowing there was another by the same name. The name would not stand in the American Pomological society's list.

Mr. Shirer: In respect to the Wild Goose plum. Do you fertilize them with others?

Prof. Green: All native plums require some others to be growing near them.

N. H. Albaugh: We have had experience with plums, and we find that the Burbank is worth all the others. In Georgia there is a stronger sunlight than here. The rot, complained of here, did not appear there, and the fruit hung literally as beads on a string. In 1897 we had a crop of Burbanks in Kentucky, and the trees were absolutely bent to the ground. We got a big price for them. We sold 500 bushels in Cincinnati.

A Member: Do they require thinning?

N. H. Albaugh: No, we do not thin them at all. They do not need it.

A Member: How are they in size?

N. H. Albaugh: They are about the size of the Wild Goose plum. They are of a nice size and command a good price. If I was planting plums to-day I would not disregard the Japanese. Twenty-eight degrees did not kill the blossoms.

Mr. Ohmer: What is the best thing to prevent rot on plums?

N. H. Albaugh: I cannot answer that.

Prof. Green: In the first place, there is quite a difference in varieties. The Lombard is particularly liable to rot. I think you can do a great deal in the way of selection of varieties. Spraying is not quite a perfect remedy, but it does a great deal of good, especially if you begin in time. We have tried it with perfectly satisfactory results, and it does save money for the fruit grower.

Mr. Bear: I want to say in regard to poor growing trees, that it is hard to get the nurserymen to grow them. They do not want to do it. It is hard to get people to take them. I find that I burn many trees because I cannot sell them.

Pres. Cushman: There is another matter to which I desire to call

attention. We have a letter from Mr. Brackett making a request for a photograph of our society.

Prof. Selby: I am not much in favor of having my picture taken, but I move that arrangements be made to comply with Mr. Brackett's request to this society.

Mr. Harrison: Have we the time to spare? It is now eleven o'clock, and we are not nearly through with the program yet.

Pres. Cushman: I take it for granted that the motion means that the picture shall be taken at the close of this session.

On motion the society voted to have a group picture taken in accordance with the request of Mr. Brackett.

Pres. Cushman: There has been a suggestion made several times during this meeting that we should have additions to the Centennial Committee. That committee expects to have a meeting this afternoon with the director, Hon. D. J. Ryan.

Mr. Ohmer: I want to say that I think it is necessary to enlarge this committee. I think it should be made five instead of three. Now is the time to appoint these men to take hold of this matter and make a good showing at Toledo. There is a great deal of work to do, and we must begin now. I cannot give the work very much time.

Mr. Woodard: I move that the president appoint two more men on the Centennial Committee, making that committee five instead of three.

On motion this resolution of Mr. Woodard was adopted.

Pres. Cushman: In accordance with the resolution just passed I will appoint Mr. Albaugh and Mr. Harrison as additional members of the Centennial Committee.

Mr. Ohmer: I want to say that it is my understanding that committee is to incur no expense against this society. Mr. Ryan tells us that. This is for the benefit of the State of Ohio. You might think that it will cost this society some money, but such is not the case.

Mr. Farnsworth: I think Mr. Ryan said so yesterday. I do not think our society should bear any of the expense.

Pres. Cushman: The next thing in order will be the legislative committee.

Mr. Harrison: I do not want to serve on that committee.

Pres. Cushman: I think that is a very good committee, and has done good work. I will re-appoint the same committee.

Pres. Cushman: We will now listen to the report of the delegates to the Philadelphia meeting. Prof. Lazenby will first report.

Prof. Lazenby: I think that it is fair to say that this very successful meeting of the Pomological society was due largely to the fact that the secretary is now connected with the Pomological division of the department of agriculture. He has the means of intercourse and he has the interest in the work. I feel that to Mr. Taylor is largely due the

success of this meeting. I have some further notes, but these are the essential points.

Pres. Cushman: We will now listen to the report of Prof. Webster as delegate to the Philadelphia meeting.

Prof. Webster: This organization came to Ohio a few years ago, and I thought it was about dead, but I want to report that it is very much alive now. I was much impressed with their building there, which is owned by the Horticultural Society. It is a large, commodious building.

#### REPORT AS DELEGATE TO AMERICAN POMOLOGICAL SOCIETY.

By F. M. WEBSTER.

It is well known that this old and once useful organization came to Ohio, a few years ago, with rather impaired vigor. It was looked upon as being a probable case of kill or cure, and I am delighted to report renewed vigor with prospects of full recovery.

At its last meeting, over one-half of the states in the Union were represented, and the papers presented were of such a character as to be of general and widespread interest. They dealt with problems of a general nature, and it seemed to me clearly indicated that there was ample room for the society.

In our local and state societies, we may deal with local problems, but in the American Pomological society we may, very properly, deal with interstate and international problems.

The displays will necessarily be somewhat of a local nature, but even here, it seems to me that there is an opportunity to broaden. Though not a fruit grower myself, I could not help being interested in the variations of fruit in different localities. The New Jersey Kieffer pear seems to be earlier and better than is the case in some other localities.

Then, the effect of some commercial fertilizers on the color of grapes was another, to me, interesting matter.

In short, it seemed to me that the American Pomological society was on the way to become one where we might go and get wider and better views than in our home society. Not that its members are any better or more competent, but it is the more proper place to bring up and discuss such matters.

The attendance was good and the discussions very interesting. There were many more papers than there was time to present, and a large number went over unread, to be published, however, in the forthcoming proceedings. In fact, it looks now as though one might get the full worth of his money in the published proceedings, even though he might not be able to attend the meetings in person. It seems to be the wish and expectation of the present officers to bring about this condition of affairs.

Mr. J. J. Harrison was re-elected vice president for Ohio, so we shall be creditably represented in the future.

I was much struck with the building owned and occupied by the Pennsylvania Horticultural society. It is centrally located in Philadelphia, is large and commodious and brings in a satisfactory revenue to the society, as it is in great demand for social and other gatherings. Of course this is at present out of sight for our own state society, but we may look forward, as the small boy does, to the presidential chair, and there is nothing that cannot be brought about if sufficient united effort is put forth and the pull is continued. The home in the State House is a good beginning, but it need not stop there.



Pres. Cushman: We will now listen to another report of "The Orchards of Western New York, as Seen by an Ohio Man."

Mr. Miller: I think I want to apologize for this rambling paper. I did not know, until a few days ago when I received a program of this meeting, that I was to report.

#### THE ORCHARDS OF WESTERN NEW YORK, AS SEEN BY AN OHIO MAN.

BY WM. MILLER.

Your secretary, early in July, announced that he desired to visit some of the orchards and orchardists of western New York, and requiring the sustaining influence of a companion, invited the writer to act in that capacity. The conviction also came upon the writer that he would be in better condition for his fall campaign if, as David Harum would say, he "had his shoes pulled an' ran loose for a spell." And that was how it came about that the scant crops of St. Johns and Mountain Roses were left to be harvested by the boys.

When in a city, we never miss an opportunity to visit the markets and our friend, the commission man. During a few hours spent among the commission houses in Buffalo, we found one of them industriously repacking California peaches into home baskets and labelling them "Ohio peaches." Having the impression that everything big and beautiful in the fruit line came from California, it seemed truly flattering to our home peach industry to know that in at least one city, Ohio peaches were considered better than California's. We can always learn something of the commission man.

Acting further on this idea, we frankly stated to one of them the purpose of our trip, and were soon armed with letters of introduction to the most progressive fruit growers of the best fruit sections of western New York. As our route lay by way of the falls, we could not resist the temptation to stop awhile. This was our first visit to the falls since the state had taken possession of the falls, and surroundings and made them the property of the public. Great is the contrast of the present surroundings with those when every desirable view was obstructed by a high board fence, and the falls could be seen at only so much a peep. The state of New York is to be congratulated for having rescued this world of beautiful scenery from the hands of vandals.

From the falls our route was down the new Gorge railway to Youngstown. It required heroic courage to turn from the magnificent scenery to the prosaic work of tramping through dusty peach orchards. Our purpose was to examine and ascertain whether Northern Ohio peach growers had reason to fear competition from this locality. Here we found a similarity in the forest growth, indicating a soil very similar to that in our own county.

We were unfortunate in not finding the owners at home, as evidently all fruit growers were taking vacations at the same time. Fruit growing in that locality must be a prosperous business for it had taken one to Thousand Islands, another to the Adirondacks, and a third to his summer cottage by the lake.

The orchards, however, seemed to have a discouraged look, and we did not wonder at it when we found from ten to ninety per cent. of the trees affected with yellows. And again, much of the marketing was done by team to Buffalo, a distance of thirty to forty miles — enough to discourage any tree from doing its best. Besides this, the owners seem to have been infatuated on Early Rivers peaches, for much too great a percentage of their orchards are of that variety. To us it did not look the part of wisdom for growers in the farthest north to attempt to sell this measly fruit at a time when the markets are full of better sorts from lo-

calities farther south. We found their season, this year, about ten days later than our own.

With such inconvenient markets, bad selection of varieties, the universal prevalence of yellows and indifference in regard to its presence, added to a worn out appearance of the soil, we do not look for Niagara county, N. Y., to drive Ohio peach growers out of business during the first decade of the twentieth century.

A similar infatuation in regard to varieties seems to have seized the plum growers, for we found too many trees of the Niagara or Bradshaw, one of the earlier, when location, climate and markets would suggest greater success with later sorts.

The trees here nor at any point visited in New York do not make the rank, rapid growth as at home, probably on account of a less fertile soil and a somewhat shorter growing season.

At Rochester, that Mecca of the American fruit grower, the pilgrim does homage first to the specimen and trial grounds of Messrs. Elwanger and Barry. Here the student of horticulture could profitably spend days or weeks in the study of fruits, ornamental trees and plants. We never could account for the persistence with which this firm continued to recommend the Anjon pear, but after seeing on their grounds the loaded trees of perfect fruit, we did not wonder that their enthusiasm did not abate.

One of the most interesting features of the trip was a visit to the commercial orchards of C. M. Hooker, vice president of the Western New York Horticultural Society. Here we found 130 acres of the best looking, practical business orchards it was ever my privilege to see. It was not kept in fancy show condition, but good enough for profitable results. We notice here, as elsewhere in New York, the tendency to avoid putting the "eggs all in one basket" by planting only one kind of fruit, for we find apples, pears, plums, quinces and cherries, as well as small fruits, planted together, alike receiving good care, and each depended upon to increase the farm earnings. Hubbardston occupies a prominent place in the apple orchard and is counted one of the most reliable money-makers.

Nor did we forget to visit that successful horticultural writer and editor, Charles A. Green, of Green's Fruit Grower, whom we found surrounded with evidences of busy and prosperous editorial work.

At Geneva, we were taken into custody by the genial, veteran fruit grower, S. D. Willard, to whom we are indebted for a day of rare pleasure. Among the most instructing things in his extensive plantation was a block of Burbank plums loaded with fruit and just ready for the harvest. The fruit had been thoroughly thinned, and the plums were of large size. No rot to be seen. One specimen taken home as a sample kept twenty days before beginning to decay. In contrast with the behavior of this variety at home, every plum rotted on the tree before ripe enough to gather. This occurring two years in succession takes the enthusiasm out of attempts to cultivate the Japanese plum.

We may mention here that fungous diseases of fruits seem less prevalent than at home. Whether this might be attributed to the excessive drought prevailing in that section this year, or whether it is always less prevalent, we could not determine.

The Sutton Beauty apple, as seen in Mr. Willard's orchard, seems to deserve the praise he has given it.

An afternoon at the Geneva experiment station, under guidance of the genial Prof. Beach, was not the least interesting portion of the trip. Here we found 138 varieties of apples fruiting this year. So many of the varieties were ripe or approaching ripeness that the orchards made an interesting exhibit. Plums, also, were in fine condition to study varieties.

At the commercial orchard of E. Smith & Sons, fifteen or twenty miles south

of Geneva, we found the finest peach orchard seen anywhere in New York. This is located on the east side of Geneva lake, a body of water which never freezes, making it an ideal climate for the peach. As this was a kind of an off year with peach growers, Mr. Smith only estimated his crop at 15,000 bushels. He had already harvested 25,000 bushels of apricots and had a promising show for grapes in a 100-acre vineyard, with plums and pears in corresponding quantities. The whole 700-acre farm and nursery received good care and betoken Mr. Smith as a busy man.

Nowhere in New York fruit growing did we see the small farms and small holdings as at home, indicating that fruit growing, like other forms of business, is passing into the hands of large concerns and may soon be absorbed by the trusts.

After looking the ground over our conclusions were that the New Yorker can excel his Ohio brother in growing apples and plums. He can equal us in the production of pears, quinces and cherries. But we will not surrender a single one of our laurels in peach culture.

Pres. Cushman: We are now ready to hear the report of the committee on final resolutions. Mr. Coan will read that report.

#### FINAL RESOLUTIONS.

WHEREAS, The duties devolving upon the officers and committees of the thirty-third annual meeting of the Ohio State Horticultural Society have been many, and difficult, and have been discharged fearlessly, fairly and with marked ability:

WHEREAS, The citizens, the Pomona Grange and its committee of entertainment have displayed to the convention their hospitality unselfishly and with untiring energy:

*Resolved*, That this society extend to the president, vice president, secretary and treasurer and committees of the organization as well as to those who have made displays of fruits, vegetables and flowers, to Mr. Shuey, of the National Cash Register Company, the members of the staff of the Ohio State University, and of the experiment station, and Dr. Georgia Merriman, the sincere thanks of the members as a token of their appreciation of the manner in which their duties have been discharged.

*Resolved*, That the thanks of the meeting be extended to Mr. C. W. Montgomery and his fellow workers for their untiring efforts in our behalf, and to Mr. Philips, secretary of the Licking County Agricultural Society, and the Newark Street Railroad Company for their courtesy.

J. L. COAN,  
C. C. STERLING,  
WILLIAM MILLER,  
Committee.

N. H. Albaugh: Mr. President, I move that we do now adjourn sine die, from one of the most successful meetings that the Ohio State Horticultural Society has ever held.

Therefore, on motion of Mr. Albaugh, the convention adjourned sine die, at 11:30 A. M., Friday, Dec. 8, 1899.

#### WHAT PLANTS SHOULD BE SET IN THE FALL AND HOW PROTECTED.

A number of questions on the program were not discussed for lack of time and I have secured answers to several of them from the parties who were appointed to discuss them, as follows:

What plants should be set in the fall and how protected?

If this question was stated differently and asked what plants may be set in the fall, it would then be much easier to answer, for experience has shown us that all fruit plants may be successfully transplanted at this season, so they may be in spring, then the question would rest with the will or desire of the planter. If in the fall he finds he has time, if his ground is in order, or can be gotten in shape, if his soil is well drained and properly fertilized, or to cut the matter short, if he is ready, by all means let him plant at once and not defer until spring with its uncertainties.

You ask a nurseryman his opinion of the time to plant, and if it is after spring packing he will say in the fall. If after the fall packing when you ask him he will say in spring. Naturally you think this rather funny; however, it is the fact, and in our opinion he is telling the truth, whether he does it intentionally or not. Now with all that has been said and written in favor of or against fall or spring planting means no more nor no less than simply this, plant when you get ready, and get ready just as soon as you possibly can, for if you have no fruit, your life is too short to put it off from season to season, for in so doing you lose a year's time or six months at least in obtaining a crop.

Now to return to the question, "What plants should be set in the fall and how protected?"

Our answer is *all plants* should be set in the fall if you can possibly accomplish it, but if you cannot at that time, then by all means plant in the spring, for one time is just as good as another, except the loss of time as above stated, but *bear in mind* there are *certain conditions* in fall planting that must be observed, if even a moderate success is expected, that do not enter into spring planting at all, the most important of which and the one to guard most carefully against, is the lifting of the plants by the freezing and thawing of the soil about them. This may be readily overcome by throwing about or upon the plants any material that will break the direct rays of the sun and hold the frost in the ground. Straw litter from the horse stable is most commonly used and makes an effectual mulch. Forest leaves, corn cobs or stalks, straw or any like waste material that may be at hand. When danger of severe freezing is past then remove the mulch from the plants that it does not interfere with the young growth breaking through the soil, or from injury by direct contact. There is more to this question than appears at first reading, and to answer it correctly and clearly, so that even beginners may make a success of planting in fall, it will be necessary to make several classes in regard to manure for protection. The strawberry is in a class of its own and requires more than the ordinary light mulch of litter to hold it down. We have succeeded very well by using heavy manure from the yard and putting a forkful directly upon each plant, thus holding it in place by the weight of the manure above it. This works admirably were it not for the weed seed often contained in the manure, which starts very early and often destroys a plantation before the plants get a start.

We then found that a shovelful of earth taken from the center of the rows

and placed in a small mound upon the plant answered the same purpose and does away with the weed seed nuisance. This mound of earth must be taken off in early spring with a garden rake or fork, for if not done there is danger of smothering the plant.

The black raspberry also requires special treatment. In planting cut the canes very short so that nothing but the roots are planted, and then, as nothing remains above ground there is nothing for the frosted ground to get hold of to draw out, hence no danger of heaving. But if the ground becomes hard and baked over the plant, there is danger that the young growth cannot get through alone. To guard against any such condition of the soil, it is advisable to always put a shovelful of well rotted compost over each plant. This will keep the ground moist and loose and push an early and vigorous growth.

Red raspberries, blackberries, currants, gooseberries, grapevines, shrubs, roses and all kindred plants simply need a coarse litter mulch thrown about them after planting to keep the frost in as long as possible.

Another cause of failure in fall planting is from planting on soils not thoroughly drained. If you can not select a well-drained plot, then you had better defer until spring, and even then it should be drained before the following winter to insure success. Water about a newly set plant is almost always certain death to it.

For large commercial planting, spring is usually preferable, owing to the increased expense of mulching and difficulty of procuring same in the quantities required.

Currants and gooseberries start growth very early in the spring, and unless dug in the fall and held in dormant condition must be planted very early, and for this reason many advocate planting these fruits in fall, but it can be done just as successfully in spring if they are kept dormant, even if planted very late in the season, although it stands to reason that the earlier planted the more growth.

This question of fall and spring planting is about the same as "What variety is best?"—it can not be answered to the satisfaction of all, as some succeed best at one season and others the opposite season, and the difference of opinion in all cases arises from the different methods followed or the natural conditions existing upon their plantations.

W. N. SCARFF.

## WHAT SHALL WE DO TO REPLACE OUR FORESTS?

By S. R. MOORE.

In the early part of this, the nineteenth century, Ohio was almost entirely covered with a dense forest, an occasional cabin and a few towns, or rather villages, with not any well-defined roads, perhaps better known in that day as bridle-paths, leading from place to place. Villages have now grown into prosperous cities, with immense buildings that tower heavenward as though it were intended to ridicule the highest peak of the Rocky mountains, or a rebuke to the Pyramids of Egypt.

With the advance guard of civilization the forests were devastated by our forefathers' sturdy frames, for reasons I shall try to illustrate.

The first use of timber to be placed in the cabin was a suitable sized tree which of the younger growth, regardless as to whether poplar, oak, hickory, walnut or anything that was smooth and straight, and on an average about twelve to fifteen inches in diameter, first unhewn, then later on hewn. The large, smooth, straight-grained trees were split into rails, used for fencing up the cleared fields. Another larger portion of the logs was collected into huge heaps, and there burned.

As the country became more settled, log-rollings were in order, and neighbors assisted one another in turn, making a social frolic, and at the same time effectually by arduous labor, dispensing with such timber as was not utilized, as already stated. Saw mills propelled by water power were a step to a more progressive way of preparing material for frame barns, houses and other buildings.

During the middle part of this century, railroads, threading the country everywhere, demanded timber for ties, bridges, cars, etc. The increased demand for timber brought about still another method of supplying this increased demand for lumber. The broad-axe was cast aside, and still more rapid methods of fitting material for the builders' use were employed, namely, that of the circular saw, portable engine and mills, which soon made savage inroads upon the then half acreage or so much timber as was left standing.

Since the days of the log cabin, please compare the material used then, and that in use to-day; look at the vast quantities of material used in building railroads, houses, vessels, etc., which must sooner or later yield to the elements of weather and decay. Are we not in danger of a forest famine, when we have before us such vast quantities of material used daily? What should be done to provide for the future, looking ahead to the close of the twentieth century, whether in Ohio or in other states, at the rapid displacement of our already exhausted forests? In about one-half of our state we have less than fifteen per cent. in timberland. Timber, unlike any other crop, should be planted to-day for the benefit of the second or third generation which will surely follow.

Have we learned yet to be economical? In some localities, yes. When fuel is scarce and high priced the timber lands are carefully culled, and all falling or declining trees are converted into use for fuel. Where coal is abundant and cheap, or natural gas used, wood is not needed, and large quantities, fit for no other purpose than fuel are allowed to decay. About my own county, Muskingum, and even in the city, boxes, barrels and old building material are either burned or dumped overboard in some near-by ravine, and there allowed to waste away.

This may appear a little like a fairy tale, but it is a fact. I have often wished that some of our less favored people could only have the privilege of so much lost material. If timber is so scarce, why so much waste? For the reason already referred to, it is not fit for mechanical purposes, and for fuel only. Ohio, so far as I am aware, has no timberland reserved, no laws restraining the owner from annihilating every tree on his possessions.

What would be the condition of this great state, should every vestige of timber be destroyed? Is it not a detriment to the farmer? On one hand, I am led to believe he may cultivate more acres with a lessened quantity to the acre. Then would it not be better to devote a portion of his farm to timber? He would have less acres to cultivate, and with an increased yield on the face of it, he is the gainer.

How may forests be replaced? Plant trees, would be the short answer. Who will do it? The middle-aged man will say, "I will not need it." Another will say, "It won't pay me, let someone else do it. I will never live to get any benefits out of it," and other flimsy excuses. Were it possible to do so, as in many other instances like growing fruits, vegetables, or something giving quick returns, and if one person in a neighborhood makes a success in way of money return, as all his neighbors are doing in quick succession the same thing, as I have already said, if it could be practically demonstrated, everybody would fall into line for the money benefit, would it be unfair or unwise to call attention to our legislators to enact such laws as would benefit the entire people of Ohio?

Or what course should we pursue? Agitation is one of the forerunners of almost everything that is accomplished. This is the object in view in presenting this somewhat rambling paper.

Forest influencing rainfall.—Be that as it may, it does, to a certain extent, modify.

As a protection from wind, it most certainly is beneficial. In the eastern and southeastern parts of Ohio, among the hills where land is not much tilled, many acres could be made available for timber.

On the level farms of the western part of the state, timber belts as wind-breaks certainly would be of great value. How to induce the people to plant is the problem.

It would hardly be fair to ask the state to pay a bounty to such persons as would be the real beneficiaries, by protecting themselves, and later on by the money value derived. Exempting timberland planted may in a few instances be one of the remedies. I think that would probably be a starter.

What kind of timber should be planted? Most of the owners of to-day know what timber formerly grew on their land—that would be the best evidence that the same should be planted. Walnut, oak and poplar, being the most sought for outside the pine, are well adapted to both climate and soil. Chestnut is confined to sand stone or slate, sugar-maple will grow almost anywhere, beside making a beautiful tree along the roadside, nor does it require a great many years to make it useful by converting it into a sugar camp.

Here are some measurements of trees planted and grown on our own place, now in the suburbs of the city. The trees alluded to are along the roadways or streets, and intended for shade:

Sugar Maple, about thirty-two years planted, at two feet above ground measures from eleven to twenty inches in diameter, or an average of a little over thirteen inches.

Another lot planted about eleven years ago, the largest in diameter two feet above ground are nine inches.

Catalpa Specioso, alternated in the same row, and planted at the same time, average nine inches in diameter.

Sycamore voluntarily sprang up about fifteen years ago, and are now fifteen inches in diameter, and about seventy-five feet high, straight as an arrow.

White Ash, allowed to stand where they were unmolested, were cut last spring at the age of fifteen years or thereabout, and in measuring the stump we found it fifteen inches in diameter.

A chestnut, planted in the spring of 1866, died after growing thirty-one years. We dug it up and converted the first cut eight feet long into inch boards. The best ones will make a plank fourteen to sixteen inches in width.

Another chestnut, planted a few years later, measures fifteen inches in diameter, two feet above the ground.

Silver or soft maple are rapid growers. A few years ago we were compelled to destroy a few trees planted along the side wall, which had grown for fourteen years. The first of the cut was converted into boards, making the widest ones fourteen inches in width.

In addition to measurements already given we find:

Yellow Poplar, ten years planted, fourteen inches in diameter.

Fifteen years planted, twenty inches in diameter.

Silver or Soft Maple, sixteen years planted, twenty inches in diameter.

Cypress, twenty-six years planted, twenty-one inches in diameter.

These measurements are made two feet above the ground.

These figures may not vary from others in Ohio with trees planted for shade and ornament. It is the purpose to illustrate that timber can be grown. In some localities trees may grow much faster than with us, in others not so fast. Some years ago we had some Norway Spruce that had grown about twenty years in rows. The ground was needed for other purposes, so the tops were converted

into Xmas trees, and branches sold for trimmings, and the main body of the tree converted into 2 by 4 and 4 by 4 scantling ten feet long. The first cut made from four to six pieces almost perfect, the second two or more pieces, which were used for building purposes. When dry it is a very light wood.

Planting trees for timber on the waste lands or hillsides may not be so easily done as said, to insure success. It is my belief that by using seedlings one or two years old would be preferable to larger ones. Possibly a better plan would be to scatter seed thickly and thin out as occasion may require.

Outlay need not be so great, further than by planting many other products, but time is the great factor in attempting timber culture. With these few prepared notes, and partially from a practical standpoint, it is hoped that some measures may be brought about that our timber yet standing may be better cared for, and new plantations begun.

I thank you for your kind attention, and hope to have this subject discussed.

### WHAT IS THE BEST EARLY AND LATE RED GRAPE FOR MARKET?

ANSWERED BY E. M. WOODARD (Kirtland, Ohio).

A certain professor in one of our normal schools was accustomed to tell his pupils, when they differed from him on some grammatical point and used his own published book as authority, "*That was my opinion then, this is my opinion now*, but I cannot say that it will be to-morrow." And so, Mr. President, the varieties that I shall name seem to me to be the best *now*, but we are testing new kinds all of the time and our opinion may change another year.

The *three* best varieties are Delaware, Woodruff Red and Catawba.

Others are better for home use and there are new introductions of promise.

T. V. Munson, of Denison, Texas, has originated an extra early red grape called the Presley that with me was thoroughly ripe and sweet July 28. Whether it will prove profitable for market remains to be determined.

### REPORT OF PORTAGE COUNTY SOCIETY.

RAVENNA, OHIO, December 1, 1899.

*W. W. Farnsworth, Secretary Ohio State Horticultural Society:*

MY DEAR SIR:—This society continues to prosper. During the past twelve months the average attendance has fully equalled that of any year in its history. Excellent papers have been presented by local talent, and by Prof. Orth, of Buchtel College. We miss the presence of Prof. J. W. Pike and several other valuable members who have died during the year. By their works and influence they still live with us. Scarcely twenty-one years old, this society is truly alive and working to do all the good possible. Better fruits, flowers and vegetables, prettier lawns, more ornamental foliage trees are some of the fruits of its efforts. But the best results are seen in the lives and characters of its members and their families.

This society will co-operate with the state society in the free distribution of plants and seeds to children, *provided* that a satisfactory plan is adopted.

The present officers are H. C. Parker, president; J. H. Ford, vice president; Andrew Wilson, secretary; W. H. Hammond, treasurer.

I sincerely trust that the meeting at Newark next week will prove truly successful.

Sincerely yours,

ANDREW WILSON,  
Secretary of Portage County Horticultural Society.



## THE CLARK COUNTY HORTICULTURAL SOCIETY DURING 1899.

A review of the society's membership and attendance for 1899 will not differ materially from one of the previous year. The society has a larger paid up membership than during 1898, yet not enough to boast of. The average attendance at the regular monthly meetings was from sixty to seventy, very evenly scattered throughout the year. One good feature, in the writer's estimation, is the increased interest in the exhibit table. Not only are fine specimens of fruits and vegetables brought in, but strange insects and diseased plants are here shown, to be "passed on" by the society's entomologist and others. In 1899, as in the year before, the society has had its proceedings printed, and they will soon be issued in pamphlet form.

The horticultural society this year was instrumental in inducing the county agricultural society to offer more premiums in the horticultural department at the county fair, then turned about and increased the display and bettered its own financial condition by making 465 entries and taking a twenty-five dollar premium. As an evidence of the good feeling between the fair board and our society, I would state that we have been asked to appoint a committee to help revise the horticultural list for next year's fair.

In closing, to show lack of co-operation and comradeship among county horticultural societies of Ohio, I will state that early in the year the undersigned, as secretary of the Clark County Society, sent a copy of program and printed proceedings to the secretaries of fifteen county societies, and in not a single instance did he receive a response.

A. E. HUMPHREYS,  
Secretary.

## REPORT OF MUSKINGUM COUNTY SOCIETY.

Our society has held its twelve monthly meetings during this year, with a large average attendance. Most of our programs consisted of home talent, with a few lecturers from abroad. The officers for the following year are: President, S. R. Moore; vice president, Harry Drumm; secretary, Armour McFarland; treasurer, W. F. Lenhart; executive committee, Mrs. Theodore Dietz, Jno. Jmly and A. McGinnis.

Yours truly,  
A. R. McFARLAND.

## LUCAS COUNTY HORTICULTURAL SOCIETY.

NEOWASH, O., Dec. 28, 1899.

*Mr. W. W. Farnsworth, Waterville O.:*

Your request of recent date asking for a brief report of our society, will say in reply that we meet once a month, the second Thursday, at the residences of members and that the society is constituted of male members, the wives and ladies meeting at same time and place as a floricultural society. Sometimes we meet in joint session, especially at the noon hour to partake of dinner. Our membership has increased 13 this year, and there seems to be a great deal of enthusiasm shown in the discussion pertaining to horticulture.

P. P. SUTER,  
Secretary.

## REPORT OF THE MIAMI COUNTY HORTICULTURAL SOCIETY.

This society is in a very prosperous condition, with a large membership.

The meetings are usually held at the homes of members, and a pleasant time socially is one feature of the day.

It is with this society that the State Society will meet next December, at Troy.

The officers are as follows: President, John Pierce, Troy; vice president, B. B. Scarff, Tippecanoe City; secretary, Ada A. Young, Tippecanoe City; assistant secretary, W. C. Pierce, Troy; treasurer, Reuben Moore, Piqua.

## REPORT OF THE STARK COUNTY HORTICULTURAL SOCIETY.

The Stark County Horticultural Society held eleven successful meetings within the year 1899, all at residences of members. The membership having fallen off during the panic has not fully rallied yet, but our future looks brighter. Old members are coming back and new ones gathering in, and our new president will make 1900 the banner year in the life of the society. The newly elected officers are: President, W. B. Shanafelt; vice president, Jos. T. Hayhurst; secretary, Mrs. Margaret Rockhill; treasurer, David Helman; executive committee, John F. Roth, Clayton Holl and C. W. Faust. With our venerable members, A. McGregor as entomologist and Michael Bitzer as sprayer, the codling moth, fungus and scale have got to go.

SAMUEL H. ROCKHILL,  
Acting Secretary.

## WARREN COUNTY HORTICULTURAL SOCIETY.

The Warren County Horticultural Society was organized in the year 1867, and starts in the thirty-third year of its existence in a flourishing condition. It has just passed a year of unprecedented success, both in attendance and essays.

There are to-day but three charter members living, viz.: Samuel Irons and John T. Mardis, whose postoffice address is Lebanon, Warren county, O., and James B. Graham, of Washington, D. C.

We have about seventy-five paying members, who contribute one dollar each towards defraying necessary expenses.

We usually hold what is called the strawberry meeting in June, at which time strawberries are purchased and each and every one present is served with strawberries.

We have adopted a plan of holding an annual fair in October, and paying small premiums on exhibits, which is an incentive for each one to excel his brother in one or more exhibits, and our exhibitions have been such that they might, very often, put an agricultural society to shame. It has also been very influential in inducing outsiders to become members, for they are open to all, whether members or not.

In November we have an annual exhibit of chrysanthemums. We endeavor at all times to have papers suitable to the occasion.

Our essays during the past year have been exceptional, inasmuch as they have been universally upon subjects pertaining to agriculture or horticulture.

For fear of encroaching upon space I will close with this brief report by saying that should the opportunity present itself, I shall be glad to go into a more detailed report in regard to our system and plan of work.

Officers for the year 1900 as follows: President, E. K. Snook; first vice president, J. M. Mulford; second vice president, Samuel Irons; secretary, Sylvan A. Lewis; treasurer, S. W. Gustin; executive committee, D. F. Corwin, Springboro; Rev. R. S. Hageman, Hageman; J. M. Earnhart, Lebanon; Samuel Irons, Lebanon; John T. Mardis, Lebanon; F. D. Fulkerth, Lebanon.

## THE MONTGOMERY COUNTY HORTICULTURAL SOCIETY.

The annual report of this society, which I have just received, shows that although one of the oldest it still maintains its youthful vigor and value.

Most of the successful societies of the state have been patterned after the Montgomery county society.

Nor has this been its only field of usefulness. Its influence has ever been felt in favor of better methods, happier homes and more of nature's beautiful adornments in our surroundings.

Much of the beauty of the "Gem City" is due either directly or indirectly to this society.

In the work of the National Cash Register company in beautifying their surroundings we see the ripened fruits of some of the good seed sown by this society, a work which has made the name of this company known and respected among philanthropists and lovers of "outdoor art" the world over.

The officers for 1900 are as follows: President, N. Ohmer (34th year); vice president, N. H. Albaugh; secretary, F. W. Ritter; treasurer, John Ewing.

W. W. FARNSWORTH.

## CHERRIES.

GENEVA, N. Y., Dec. 28, '99.

*Mr. W. W. Farnsworth, Waterville, Ohio:*

DEAR SIR:—Yours of 16th at hand and noted. The Montmorency Ordinaire is a variety that has generally been grown here for commercial purposes. That is what I imported from France. Time of ripening, about ten days later than Richmond.

Yours truly,

S. D. WILLARD.

ITHACA, N. Y., Jan. 2, 1900.

*W. W. Farnsworth, Waterville, Ohio:*

MY DEAR SIR:—I am sending you a copy of our Bulletin 98, and on pages 386-388 you will find the subject of the Montmorency somewhat thoroughly explained. The one which I have seen in western New York is not the large fruited Montmorency, which is a variety with very short stems.

Yours very truly,

L. H. BAILEY.

## REMARKS BY THE SECRETARY.

In endeavoring to decide whether the Montgomery Ordinaire or the Montmorency large fruited was the more valuable, I entered into correspondence with a number of horticulturists. Letters from two of them precede this.

I am now satisfied that the variety which I have in bearing is not the Montmorency ordinaire. It is probably the short stemmed Montmorency (Montmorenci á Courte queue) imported by Ellwanger and Barry, but not commonly grown.

The Montmorency Large Fruited is said by them to be superior to the Montmorency Ordinaire in quality, but unproductive.

The variety which I have is a little tardy in coming into bearing, but very productive of large, short stemmed fruit.

The tree is not as strong a grower as the Early Richmond, and the juice is darker. It is a valuable variety, but I presume the Montmorency Ordinaire, as grown by most nurserymen, is more valuable than Montmorency Large Fruited.

# LIST OF MEMBERS

OF

## Ohio State Horticultural Society.

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### A

Names.	Postoffice.	County
Aultfather, H. H.....	Minerva .....	Stark
Atwater, J .....	Castalia .....	Erie
Albaugh, N. H.....	Phoneton .....	Miami
Allen, C. W.....	Erie .....	Michigan
Adams, F. E.....	Newark .....	Licking
Arthur, Mrs. K. A.....	Zanesville .....	Muskingum

### B

Beaver, J. F.....	Dayton .....	Montgomery
Britton, J. H.....	Painesville .....	Lake
Bear, J. C.....	Dayton .....	Montgomery
Bishop, L. L.....	Mayfield .....	Cuyahoga
Brown, B. F.....	Oxford .....	Butler
Bitzer, Michael .....	New Berlin .....	Stark
Buechly, E. M.....	Greenville .....	Darke
Broadhead, E. A.....	Kittanning .....	Armstrong Co., Pa.
Baker, C. V.....	Stroutsville .....	Fairfield
Ballou, F. H.....	Newark .....	Licking

### C

Crawford, M .....	Cuyahoga Falls .....	Summit
Cushman, E. H.....	Sylvania .....	Lucas
Cox, Nelson .....	Bradrick .....	Lawrence
Counter, C. W.....	Toledo .....	Lucas
Cox, E. G.....	Bradrick .....	Lawrence
Crary, W. R.....	South Kirtland .....	Lake
Cole, W. B.....	Painesville .....	Lake
Coit, C. B.....	Glenville .....	Cuyahoga
Carr, F. E.....	Lakewood .....	Cuyahoga
Clark, F. E.....	Shandon .....	Butler
Clotts, Frank .....	Gahanna .....	Franklin
Courtwright, S .....	Lancaster .....	Fairfield
Coan, J. L.....	Dayton .....	Montgomery

### D

Dillie, W. W.....	W. Mentor .....	Cuyahoga
Dillie, O. N.....	Nottingham .....	Cuyahoga
Deming Co .....	Salem .....	Columbiana
Daily, John D.....	Box 50, Nimisila.....	Summit
Dayton, J. H.....	Painesville .....	Lake

## E

Names.	Postoffice.	County
Earhart, W. H.....	Lexington .....	Richland
Elliot, Albert .....	Defiance .....	Defiance

## F

Farnsworth, W. W.....	Waterville .....	Lucas
Farnsworth, W. G.....	Waterville .....	Lucas
Freeman, C. M.....	Tippecanoe City .....	Miami
Frease, E. S.....	Oklona .....	Henry
Foote, J. L.....	S. Brooklyn .....	Cuyahoga
Ford, J. H.....	Ravenna .....	Portage
Flanders, O. H.....	Tiffin .....	Seneca
Frahn, A. C.....	New Carlisle .....	Clarke

## G

Green, W. J.....	Wooster .....	Wayne
Gatton Bros .....	Belleville .....	Richland
Gault, W. C.....	Ruggles .....	Ashland
Geib, George P.....	1692 Lorain St., Cleveland.....	Cuyahoga
Gill, Geo. W.....	Columbus .....	Franklin

## H

Harrison, J. J., Hon. Mem.....	Painesville .....	Lake
Holderman, S .....	Kingston .....	Ross
Hale, Albert .....	Mogadore .....	Summit
Hathaway, A. F.....	Sta. F, Cleveland .....	Cuyahoga
Hale, O. W.....	Akron .....	Summit
Harrington, C .....	Box 293, Painesville .....	Lake
Hines, J. S.....	Columbus .....	Franklin
Hudson, A. D.....	West Dover .....	Cuyahoga
Hunt A. R.....	Euclid .....	Cuyahoga
Humphrey, A. E.....	Mad River .....	Cuyahoga

## I

Imlay, J. D.....	Zanesville .....	Muskingum
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## J

Johnson, T. S.....	Gypsum .....	Ottawa
Jenkins, J .....	Winona .....	Columbiana
James, John A.....	Washington C. H.....	Fayette
Johnson, G. R.....	Mt. Carmel .....	Clermont

## K

Knowlton, Levi .....	Utica .....	Licking
Knellinger, Frank .....	Zanesville .....	Muskingum
Kislingbery, Thos. ....	Newark .....	Licking

## L

Names.	Postoffice.	County
Lazenby, W. R.....	Columbus .....	Franklin
Loop, A. I.....	North East .....	Pennsylvania
Lauppe, Chas .....	Urbana .....	Champaign
Lawrence, James A.....	Harlem Springs .....	Carroll
Larue, Joseph .....	Convoy .....	Van Wert
Lullman, H. H.....	Danbury .....	Ottawa
Lupton, B. C.....	Mt. Pleasant .....	Jefferson
Lentz, D. H.....	Piqua .....	Miami

## M

Miller, W. W., Hon. Mem.....	Columbus .....	Franklin
Moore, S. R.....	Zanesville .....	Muskingum
Maxwell, J. W.....	Euclid .....	Cuyahoga
Montgomery, Carey W.....	Newark .....	Licking
McDaniels, Homer .....	Cleveland .....	Cuyahoga
Marion, Geo. C.....	Nebraska .....	Pickaway
Mumma, A. M.....	22 Linden Ave., Dayton.....	Montgomery
Malley, C. W.....	Wooster .....	Wayne
Miller, J. A.....	Osborn .....	Greene
Miesse, M .....	Lancaster .....	Fairfield
McNary, J. W.....	Dayton .....	Montgomery

## O

Ohmer, N., Hon. Mem.....	Dayton .....	Montgomery
Overhulser, D .....	Alpha .....	Greene
Owen, W. H.....	Catawba Island .....	Ottawa
Osborn, Herbert .....	O. S. U., Columbus .....	Franklin
Osborn, D. D.....	N. Dover .....	Cuyahoga

## P

Pierce, L. B.....	Tallmadge.....	Summit
Perrine, J .....	Camp Hagerman .....	Warren
Patterson, W. H.....	Melrose .....	Paulding
Philpott, S. A.....	McClure .....	Henry
Phillips, Thos .....	Shade .....	Athens
Pfimmer, Jacob .....	Milford .....	Clermont
Price, Homer C.....	O. S. U., Columbus .....	Franklin
Peirce, John .....	Troy .....	Miami

## R

Ragan, Wm. H., Hon. Mem.....	Green Castle .....	Indiana
Randall, C. H.....	Wiloughby .....	Lake
Richardson, J. L.....	S. Brooklyn .....	Cuyahoga
Roudebush, Lowell .....	Owensville .....	Clermont

## S

Names.	Postoffice.	County
Shirer, Alfred .....	Dayton .....	Montgomery
Sweet, M. E. ....	Kirtland .....	Lake
Suter, Peter .....	Neowash .....	Lucas
Sterling, C. C. ....	Grand Rapids .....	Wood
Selby, August D. ....	Wooster .....	Wayne
Scarff, W. N. ....	New Carlisle .....	Clarke
Slade, H. D. ....	E. Cleveland .....	Cuyahoga
Sorter, W. C. ....	Wickliffe .....	Lake
Stark Co. Hort. Society .....	Canton .....	Mrs. M. H. Rockhill, Sec'y
Swigart, Henry .....	Dean .....	Montgomery
Sutton, L. K. ....	Columbus .....	Franklin
Schull, Christian .....	15 Jay St., Cleveland .....	Cuyahoga
Sheldon, J. R. ....	Waterford .....	Washington
Seward, A. D. ....	St. Louisville .....	Licking
Streeper, J. P. ....	Columbus .....	Franklin
Swabbly, G. ....	Tiffin .....	Seneca

## T

Tryon, J. H., Hon. Mem. ....	Willoughby .....	Lake
Tussing, R. J. ....	Canal Winchester .....	Franklin
Teeter, D. M. ....	Belleville .....	Richland
Thomas, Oliver .....	Mt. Pleasant .....	Jefferson
Travis, E. T. ....	Defiance .....	Defiance
Taylor, Samuel .....	Pleasant Corners .....	Franklin

## V

Van Deman, H. A., Hon. Mem. ....	Parksley .....	West Va.
Vergon, F. P. ....	Delaware .....	Delaware

## W

Withoft, Fred G. ....	Dayton .....	Montgomery
Waid, C. H. ....	Wauseon .....	Fulton
Woodard, E. M. ....	Kirtland .....	Lake
Whitney, C. L. ....	Warren .....	Trumbull
Williams, Alex. ....	South Kirtland .....	Lake
Webster, F. M. ....	Wooster .....	Wayne
Wheeler Bros. ....	Melrose .....	Paulding
Williams, Israel .....	Hamilton .....	Butler
West, T. B. ....	Perry .....	Lake
Wyckoff, A. ....	Box 126, Dayton .....	Montgomery
Wheeler, W. J. ....	Paulding .....	Paulding
Warder, R. H. ....	N. Bend .....	Hamilton

## Y

Young, Henry .....	Ada .....	Hardin
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